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## THE PITYROSPORUM OVALE.

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SINCE the first detailed description of the *Pityrosporum ovale* by Malassez in 1874 there has existed in the minds of most dermatologists some doubt as to its pathogenicity in seborrhoeic dermatitis. A few years ago, therefore, I decided to make a detailed study of this organism in the hope of shedding some light on its aetiological role in the dermatoses commonly associated with the seborrhoeic state.

In order to fulfil Koch's postulates it was necessary to discover an easy method of culturing the organism in the first instance.

### PART I.—A NEW CULTURE MEDIUM.

The earlier attempts to grow *P. ovale* have been carefully set out by Benham (1947), and it would seem probable that before the beginning of this century, as stated by Sabouraud (1904), the organism had not been cultured.

The first successful culture was probably by Castellani in 1925 using glucose agar; he described an organism identical with *P. ovale* and named it *Cryptococcus graciloides*. This organism, and the strains grown by Acton and Panja two years later, were studied by Ota and Huang (1933). In their comprehensive paper in 1933 the last-mentioned writers agreed that these two strains were identical with those cultured by themselves from scalp scales.

The credit for the addition of a fatty substance to the medium to encourage growth must go to Meirowsky (1911) and to Kraus (1913) who used lanolin, and to Templeton (1926) who added oleic acid. In 1939, Benham, using a beer-wort agar medium, experimented with the addition of twenty-two different surface fats, and was able to grow eight strains from thirty specimens, and subculture five of these. Emmons (1940) isolated the organism using 2% glucose broth containing 28% glycerol. This medium had a pH of 5.5, and after inoculation was incubated at 30–37° C.

*Present Experiments.*

It will be noted that in most of the useful media glycerol or a fatty acid was found essential for continued growth. The experiments of previous workers were repeated, but each method had its disadvantages. Successful cultures were obtained with the technique of Benham, but in a smaller percentage of microscopically positive cases. Other surface oils, such as oleic acid containing 7% cholesterol, cod liver oil, arachis oil (alone and with oestrogens and androgens), the fat-soluble vitamins, human sebum and vernix caseosa were tried, but in no case was there any appreciable enhancement of growth. Emmons's medium was also used successfully as a hanging-drop preparation, but the transfer of primary cultures to oiled beer-wort agar slopes was difficult; and furthermore, an impure culture was often obtained in primary cultures from scales.

At this stage it seemed necessary to study in greater detail the biology of the organism, with particular reference to its food requirements. Accordingly, experiments were made with two strains grown after the method of Benham, and another strain, kindly given by Dr. J. T. Duncan, who had received it from Acton and Panja in 1930. Beer-wort agar slopes smeared with a suspension of penicillin in arachis oil were used in the following experiments to ascertain the optimum conditions of growth.

*Oxygen.*—Failure to grow the organism under anaerobic conditions using a McIntosh and Fildes jar, and in stab culture, showed that oxygen was essential to its survival. This is probably the reason why McKee *et al.* (1939) demonstrated *P. ovale* more easily from the skin surface than from deeper structures.

*Temperature.*—To assess the optimum temperature, plates were inoculated with equal quantities of the same suspension of the pityrosporum, and incubated at different temperatures. The quickest and most abundant growth was found to occur at 37° C. This temperature is especially useful, as it inhibits the growth of certain cryptococci, especially Benham's Group III.

*Hydrogen-ion concentration.*—Previous workers, including Benham, had found the most suitable pH to be around 5.0. Oiled beer-wort slopes, to which varying quantities of N/10 HCl had been added, were inoculated with the organism. As estimated by the Bromo-cresol colour method, a range of pH from 3.0 rising by 0.5 to 5.5 was used. No detectable difference in growth was observed, and it was later noted that the organism could survive a pH range of 1.0 to 10.0. It was considered advantageous, however, to use an acid medium in order to lessen bacterial contamination.

*Humidity.*—The organism grew best on fresh moist medium. On old dehydrated slopes the rate of growth was slower.

*Nutritional factors.*—Recent studies, using chemically defined media by Robbins *et al.* (1942), Mackinnon and Artagaveytia-Allende (1948), and Georg



(1949), have clearly shown that some of the dermatophytes have deficiencies for certain vitamins and amino-acids.

Experiments were therefore carried out using the following auxanogram medium: Monopotassium phosphate 1.0 g., magnesium sulphate 0.5 g., agar (washed) 20 g., and distilled water to one litre. To this medium, melted and seeded with adequate inocula of *P. ovale*, eight different sugars were added on different sectors of Petri dishes, but no growth was obtained unless the surface was smeared with oil or fat. No greater growth was observed with any particular sugar. Similar experiments were undertaken with synthetic and naturally occurring nitrogen sources and many amino-acids, but these were no more enlightening. Likewise none of the vitamins, either individually or in complexes, enhanced the growth.

After many hundreds of experiments no advance had been made on the already established fact that lecithin or a fatty acid must be added to simple basic media before reasonable growth occurs.

It was observed, however, that after growth of the organism on oiled wort slopes the amount of surface oil seemed to be considerably reduced, and yet no products of fat digestion could thereafter be chemically detected on the surface of the medium. This suggested that the organism could digest and absorb fat, and it seemed possible that the addition of bile, by assisting this process, might increase the rate of growth. Plates containing Sabouraud's preservative medium were therefore spread with a surface suspension of the organism, and the various constituents of ox bile added singly to sectors of the plates. About the same time, attempts were made to grow the organisms on a selection of some thirty different laboratory media.

The results were most gratifying. When sodium tauroglycocholate or ox bile was added to Sabouraud's medium an excellent growth was obtained in a few days. In keeping with this was the fact that of all the media tried a good growth was obtained only on Littman's and McConkey's media. The former contains ox bile, and the latter should contain sodium taurocholate; but in the batch used sodium tauroglycocholate, the parent substance, had been added in error. The common nutrient factors were therefore peptone and sodium tauroglycocholate.

On the basis of this knowledge the optimum strength of the essential bile salt and peptone was assessed experimentally. Thereafter to the new medium the sugars, various accessory food substances such as vitamins, enzymes, hormones, etc., were added, but no marked improvement of growth was noted.

With a view to lessening contamination by fungi and bacteria a selection of antiseptics, antibiotics and fungicides were added. The organism was found to survive the action of phenol and acriflavine in high concentrations but succumbed to mercuric chloride. Of the fungicides, it was unable to grow in those areas of the medium where a high percentage of either undecylenic

acid, phenyl mercuric nitrate, benzoic acid or copper sulphate was present. The idea of adding a fungicide was therefore discarded.

In contrast to this, no inhibition of growth was noted when penicillin, streptomycin, aureomycin and chloramphenicol were added. In view of the wider range of common coccal contaminants sensitive to penicillin than to streptomycin, and the difficulty in obtaining supplies of aureomycin and chloramphenicol at that time, penicillin was added in a strength of 300,000 units to each cold litre, if it was desired to lessen coccal contamination.



FIG. 1.—Typical growth on medium B after 7 days at 37° C. Each scale from the normal scalp of a child has produced a colony, and some show radial furrows.

The two media which have been used routinely for the isolation of the *Pityrosporum ovale* from skin scrapings are as follows :

|                                       |             |                                                                     |             |
|---------------------------------------|-------------|---------------------------------------------------------------------|-------------|
| A. Sodium tauroglycocholate . . . . . | 100 g.      | B. Sodium tauroglycocholate . . . . .                               | 100 g.      |
| Oxoid peptone (mycological) . . . . . | 50 g.       | Oxoid peptone (mycological) . . . . .                               | 50 g.       |
| Agar . . . . .                        | 15 g.       | Agar . . . . .                                                      | 15 g.       |
| Water . . . . .                       | to 1000 ml. | Water . . . . .                                                     | to 1000 ml. |
|                                       |             | (300,000 units of penicillin powder are added to every cold litre.) |             |

The hydrogen-ion concentration after autoclaving corresponds to pH 5.0.

*Technique.*—Skin scrapings are taken with a sterile scalpel from the lesion, and kept in a clean sheet of paper. No previous disinfection of the skin is desirable. The scales, in tiny pieces, are sown on two Petri dishes containing media A and B ; this is best done within seven days of collecting the specimens. After incubation at 37° C. for 4–7 days the colonies of *P. ovale* are easily recognizable (Fig. 1). A typical colony is domed, buff, and 2 mm. in diameter. The



consistence is dry and friable, and while a piece can be detached, it is impossible to take a loopful. The size and outline of the colonies vary, and occasionally larger colonies with radial furrows are seen (Fig. 2). As the latter are usually observed where the tissues have shown many organisms microscopically and



FIG. 2.—The less common type of colony, magnified.



FIG. 3.—Subculture from Fig. 1 shows the growth obtained on medium A after 4 days' incubation at 37° C.

each inoculum has grown a colony, it is presumed that they are colonies built from several cells. Exceptionally there are smooth dry colonies with a central elevation and a flattened scalloped periphery.

Subcultures grown at 37° C. show a recognizable growth in 48 hours and a

heavy growth in 4 days (Fig. 3). They may be preserved at 4° C., and regrown even after a lapse of two years.

The only organism which produces a macroscopically identical colony is the spherical pityrosporum recently named *P. orbiculare* by Gordon (1951). It is therefore necessary to check all colonies microscopically to verify the species.

## PART II.—MORPHOLOGY AND REPRODUCTION.

### *Morphology.*

The appearance of Gram-stained *P. ovale* preparations is well known, and several writers have drawn attention to its varying morphology at different stages of certain skin diseases. By such staining methods, however, the organism shrinks by one-third, its morphology is distorted by dehydration, and protoplasmic inclusions are masked. To avoid this, and to permit a view of the whole organism afloat, smears mounted in water were studied.

The organism was found to have a regular and characteristic appearance, with no essential deviations of outline resulting from age or environment. It was always oval and two-celled, and the two portions were joined by a stout neck crossed by a septum. These two parts were never equal in size, though in old colonies, where larger organisms predominated, they were nearly so. The typical average *P. ovale*, after three days' growth, measured 6 $\mu$  in length and 3 $\mu$  across the widest part, but variations in size from 4.5–9 $\mu$  in length by 1.5–4.5 $\mu$  in width occurred. Irrespective of the medium used, multiple budding or the formation of hyphae was never observed.

The appearance of single thick-walled spherical spores, so frequently described, was considered to be an optical illusion due to the organism standing on end, or perchance a different species was being examined. In water mounts the organisms, either singly or in pairs lying side by side, could be seen turning somersaults, and by the smaller portion underneath shining through, gave the impression of a spherical organism with a central gelatinous body or a thick capsule.

### *Staining Reactions.*

The mature organism is Gram-positive, and the protoplasm may be stained with the basic aniline and Romanowsky dyes. For staining fresh tissue the polychrome methylene blue method of Muskatblit (1949) gave the best results provided sufficient decolorizing was allowed. This method showed up some blue-black intracellular granules, which could also be demonstrated by the methods of Albert and Neisser.

*Nuclear staining.*—A nuclear apparatus has been demonstrated in *S. cerevisiae* by Rochlin (1933), and in that same organism and *B. dermatitidis* by DeLamater (1948), but as yet has not been shown in *P. ovale*. This was found possible by using the Feulgen, acid Giemsa (Robinow, 1945), and basic



fuchsin (DeLamater, 1948) methods (Fig. 4). With these techniques it was found necessary to continue acid hydrolysis at 58° C. for 18 minutes. DeLamater *et al.* (1950) have already drawn attention to the variation of time required for this process in different organisms. The presence of small quantities of desoxy-ribosenucleic acid having been demonstrated by these specific cytochemical methods, it was found simpler to use the short eosin technique of Bissett (1950) as a routine. This method stains the cytoplasm pale blue, and the nucleus, surrounded by an unstained halo, is bright red. In the more mature cells a nucleus could be found in both segments.

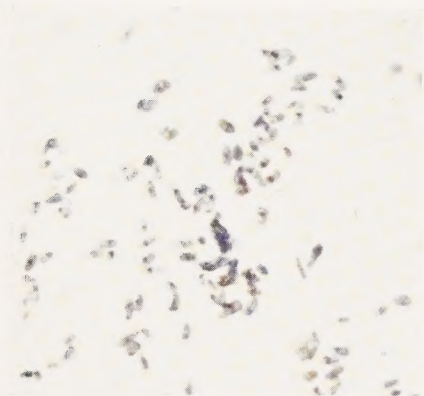


FIG. 4.—Slide stained by the basic fuchsin method to show the nuclei. ( $\times 1700$ .)

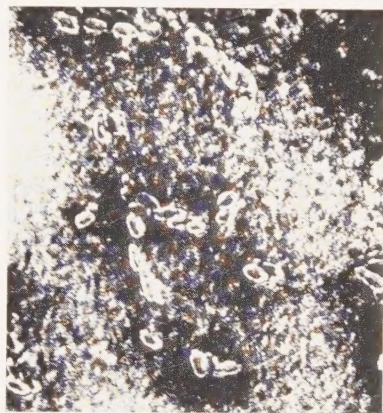


FIG. 5.—Slide stained by Gram and indian ink to show the unstained capsular space. ( $\times 1700$ .)

*Capsular staining.*—When stained by the method of Richard Muir a well-defined pale blue capsule is seen to envelop the carmine cytoplasm. As pointed out by Lenormand (1948) in his study of yeast capsules, in dying cultures of *P. ovale* only the capsules were stained, and in young organisms a greater quantity of capsular substance per organism was observed. Muir's method was considered superior to the Churchman and Emelianoff (1933) technique as it gave greater definition, and the reagents were more stable.

The capsules could also be shown by negative staining methods, and when examined under dark-ground illumination. In the former the organism is stained by Gram's method, and a small quantity of indian ink spread over the dry film. The cytoplasm becomes deep blue, and a clear space is apparent between this and the ink particles, which are halted and denser at the capsular margin (Fig. 5). It was found that 10% Nigrosin was capable of decolorizing the periphery of the cytoplasm, and gave a false exaggeration of the capsular thickness.

By the use of McManus' stain, before and after treating the smear with

diastase, it seemed likely that this capsule was a polysaccharide. As this was confirmed by Best's carmine technique and the Bauer method, the chemical nature of the capsular substance was next investigated.

*Chemistry of capsule.*—Twelve plates of medium were heavily inoculated with *P. ovale* and incubated for seven days at 37° C. The growth was then removed, and washed four times in distilled water. The capsular substance was next separated by suspending the cells in 0.5 N HCl at 75° C. for 35 minutes. This process killed the organisms, and the decapsulated remnants were then centrifuged down and discarded. The supernatant fluid was withdrawn and neutralized with NaOH. This fluid was precipitated three times with 10% sodium acetate and three volumes of ethyl alcohol after the method of Kligman (1947). Finally 10 mg. of a colourless crystalline powder were obtained. The powder was dissolved in 5 ml. of distilled water, and gave the following reactions :

Molische test for carbohydrate : Strongly positive.

Biuret test for protein and iodine test for starch : Negative.

Fehling's test for reducing sugars was negative, and likewise after hydrolysis using 2N HCl for 6 hours at 98° C. no reducing sugars were produced.

From these experiments, and its failure to be dialysed, it seemed likely that the capsular material was a stable polysaccharide with a large molecule.

### *Reproduction.*

Most workers have suggested that reproduction is by simple budding, though longitudinal fission was suggested by Benham. Using hanging-drop preparations, and the new medium without agar, culture mounts were studied over a few days. By this means, and the frequent study of colony smears at different stages of growth, it seemed probable that the daughter spores were already flask-shaped, and not single cells before separation. The youngest organisms observed had a tiny polar bud, which slowly increased in size until it approximated to the size of its mother-cell. At this stage the neck narrowed slightly, and at this constricted point of junction the two segments twisted as upon a hinge, until finally two organisms complete with tiny polar buds were formed by separation. This septation appeared to take place within the parent capsule, and thereafter the two new organisms could be seen lying side by side. No longitudinal fission was observed, and it was concluded that reproduction was solely by septation (Fig. 6).

*Rate of growth.*—Consistent results were not easily achieved ; only an average approximation of the growth cycle of *P. ovale* could be recorded. The main difficulty was in overcoming the tendency for the organisms to form colony clumps with consequent inaccuracy of cell counts. To diminish this the following technique was adopted :

A screw-cap serum bottle containing thirty small glass balls and 10 ml. of



the liquid medium was warmed to 37° C. and inoculated with *P. ovale*. It was then agitated horizontally at great speed for ten minutes. Samples were withdrawn at regular intervals to be counted in a haemocytometer chamber using a white cell pipette. The aqueous diluting fluid contained 1% Cetavlon (I.C.I.) as a detergent, and sufficient methyl violet to render it light purple, and so tint the organisms. At each count three different pipettefuls were withdrawn, and five counts were done from each. At first counts were done at intervals of 24 hours, later every 6 hours, and finally estimates were done at half-hourly intervals.

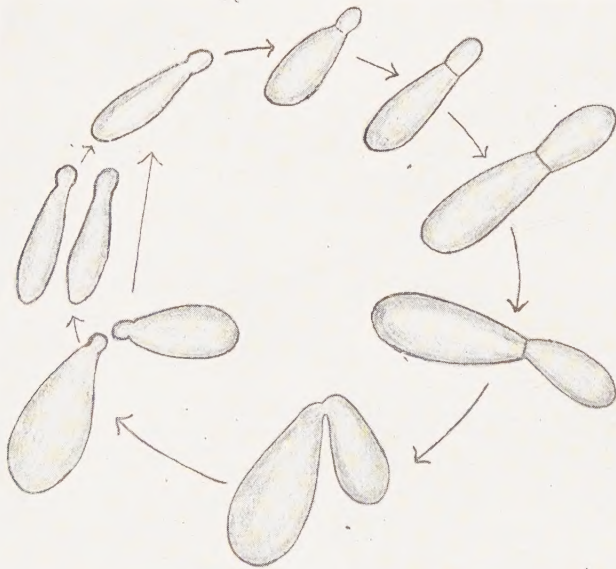


FIG. 6.

From the mean results of these experiments it appeared that the organism had a lag phase of a few hours, but by the end of six hours there was a 60% increase in number. At the end of one day the original number was slightly more than doubled, and during the next week the rate of reproduction slowly decreased. There was no numerical evidence of reproduction after ten days. These findings were confirmed by simultaneous microscopic examination of smears, which showed the different phases of reproduction and degeneration corresponding to the cell counts.

### Resistance.

Reference has already been made to the resistance of *P. ovale* to antiseptics, antibiotics and fungicides, when the addition of a suitable decontaminating substance was being considered for the new medium.

*Temperature variations.*—The effects of varying extremes of temperature were investigated, and the organism was found to have average bacteriological resistance. A washed suspension kept in Hartley's broth at  $-70^{\circ}$  C. and another at  $-20^{\circ}$  C. were still viable after 18 months. Washed saline suspensions of the organism were heated in a water-bath, and kept at a range of temperatures varying by  $5^{\circ}$  C. from  $40^{\circ}$  C. to  $80^{\circ}$  C. for 30 minutes. The temperature was read from a thermometer in an identical control tube. Samples were withdrawn, culture plates inoculated, and slides prepared at each temperature. At  $45^{\circ}$  C. a good growth was obtained, but slides stained by Muir's method indicated that about one-third of the organisms had succumbed. After exposure to  $50^{\circ}$  C. for half an hour the survival rate was very low, but a few strains could even survive  $60^{\circ}$  C.

An interesting feature noted from these experiments was the production of smooth glistening rather conical colonies on many of the plates. This rough to smooth variation, well known to bacteriologists, was not associated with any change in cell morphology, and could not be reproduced on subculture. A similar colony variation has been observed by DeLamater (1949) in the yeast-like phase of *Blastomyces dermatitidis*, but this was accompanied by cytological variations. The mutation of *P. ovale* was probably an adaptive response following the severe changes in environment; it is unlikely that the saline alone could account for this instability, as it was also seen after cold storage in Hartley's broth.

*Radiation.*—Exposure to ultra-violet light did not harm the organism, and it was also able to withstand 500 roentgen units of superficial x-ray radiation.

*Biochemical reactions.*—The organism failed to liquefy gelatin, and did not reduce glucose, maltose, sucrose, lactose, salicin, mannitol or dulcitol, even after prolonged incubation.

#### *Taxonomy and Nomenclature.*

The *Pityrosporum ovale* is an asporogenous, non-mycelial yeast belonging to the order Moniliales, the family Pseudosaccharomycetaceae, and the sub-family Torulopsidoideae. It differs from other members of this sub-family in its peculiar nutritive requirements, and therefore merits the generic name of *Pityrosporum*. This genus, so named by Sabouraud, was defined by Lodder (1934) as "cells predominantly flask-shaped, budding frequently on a broad base." In agreement with Gordon (1951), it is recommended that this genus be redefined to include anascosporogenous lipophilic polymorphic yeast-like organisms, the genus to include the *P. ovale* and *P. orbiculare*. According to Lodder the species *P. pachydermatis* (Weidman) and *P. rhinocerosum* (Sabouraud) are identical; but whether they differ from the oval and round types can only be established when cultures are available for study.

It is apt that the name of Bizzozero should be associated with both the



established *Pityrospora*, as it seems certain that his *Saccharomyces sphaericus* and *S. oralis* were in fact the organisms now designated *Pityrosporum orbiculare* and *P. ovale*. The nomenclature recommended by the Medical Research Council—*Pityrosporum ovale* (Bizzozero) Castellani and Chalmers—should therefore receive general approval.

### PART III.—ANIMAL AND HUMAN EXPERIMENTS.

#### *Animal Experiments.*

No survey of the incidence of *P. ovale* has so far been done, although Weidman in 1925 cultured a pityrosporum from a rhinoceros suffering from generalized exfoliation. Scurf scrapings from healthy domestic, laboratory and wild animals were therefore cultured for *P. ovale*. This survey is still incomplete, but so far the organism has been cultured from a fourteen-year-old male llama and a golden spaniel.

The application of a culture smear on the shaved skin of the commoner laboratory animals, left in contact for two weeks, failed to produce any reaction.

In view of the presence of a polysaccharide capsule ensheathing the organism, it was decided to investigate its possible role as an antigen, when suspensions were injected into laboratory animals. A sterile saline suspension of live young *P. ovale* was put in a screw-cap serum bottle containing thirty small glass balls. This was mechanically shaken at high speed for twenty minutes in a horizontal agitator to obtain a fine dispersion. This coarse shaking did not kill the organism, as the suspensions could be recultured thereafter, and even after animal passage. Estimations of the density of the suspension were done by comparison with Wellcome opacity tubes, and for record purposes the figure entered represented the equivalent number of *B. coli* per c.c. which would produce an identical opacity. When the suspension was denser than the maximum opacity of the sample tubes, it was diluted until it could be estimated and this opacity figure multiplied by the number of dilutions before recording.

*Mouse experiments.*—A healthy mouse was given eight intra-peritoneal injections over a period of four months. As the initial dose was innocuous, a larger amount was injected on each occasion until a final dose of 0.5 ml. of a 951 opacity was given.

The mouse remained healthy throughout, and on being killed and dissected revealed no disease. A few *P. ovale* were retrieved from peritoneal washouts, but they did not show any capsular swelling; moreover, this could not be induced when normal organisms were mixed with the serum obtained from the heart blood of this mouse.

*Rabbit experiments.*—Several workers have been successful in demonstrating antibodies in the serum of rabbits inoculated with yeast-like organisms. Thus

Martin (1935) and Peck *et al.* (1940) have demonstrated complement-fixing antibodies in blastomycosis; and Negroni (1936) has shown agglutination with a cellular suspension of *C. albicans* in the presence of immunized rabbits' serum. Likewise Hoff (1942) injected rabbits with a heat-killed suspension of *Cryptococcus hominis*, and demonstrated agglutination at a titre of 1/180. Salvin (1947), Saslaw and Campbell (1948), and Tenenberg and Howell (1948), using rabbits, have demonstrated complement-fixation tests for histoplasmosis. The rabbit would therefore seem to be the most suitable animal for similar experiments with *P. ovale*.

In the present investigations a pair of healthy rabbits were injected intravenously with a suspension of *P. ovale* twice weekly over a period of two months. The initial dose was 0.2 ml. of a 379 opacity, and this was slowly increased to a final dose of 5 ml. of a 3090 opacity. The rabbits remained well after this treatment, and survived two years thereafter. From the serum withdrawn no antibodies could be demonstrated, so a second pair were given injections of higher dosage.

In the second pair of rabbits the dose ranged from 4 ml. of 3000 opacity up to 10 ml. of 21,210 opacity in one, and 28,282 opacity in the other rabbit. During this experiment serum was withdrawn from time to time and stored at 4° C. These animals died within 12 hours of their final injection.

Post-mortem examination showed the rabbits had died from acute congestive heart failure. *P. ovale* was cultured from the spleen, liver and lungs; and microscopic sections of these viscera showed the organism to be chiefly in the blood-vessels, with little or no defensive tissue reaction.

*Serology.*—1. Agglutination experiments were performed on a standard dilute suspension of *P. ovale* against serum dilutions from a normal rabbit, both "immunized" rabbits, a guinea-pig and a human, but no agglutination was obtained.

2. Likewise no precipitation was seen on testing the supernatant fluid of a centrifuged suspension against the "immunized" rabbits' sera.

3. Capsular swelling of the organism when mixed with the "immunized" sera could not be demonstrated, and the histological sections stained by Bauer's method did not show any increase in polysaccharide material.

4. Experiments were made in order to discover complement-fixing antibodies.

Concentrated suspensions of *P. ovale* were found to be highly anti-complementary, but a 1 in 60 dilution of 379 opacity was not. This was used after heating to 56° C. for 30 minutes. Sera were taken from the "immunized" rabbits and stored at 4° C. They were inactivated at 56° C. for 30 minutes before use. Tests were allowed to remain for 15 minutes on the bench, and for a further 30 minutes in a water bath at 37° C.

Neither of the rabbits' sera fixed even one dose of complement in the presence of the antigen at a dilution of 1 : 2 or higher.



From these experiments it was concluded that *P. ovale* was not pathogenic to the rabbit, and that its presence in the blood-stream of this animal did not cause the production of antibodies.

### Human Experiments.

In the past many workers have compared the incidence of *P. ovale* microscopically in scrapings taken from normal and seborrhoeic subjects. In this country Bigham (1937) reported its presence in all twenty normal scalps examined, and in one-fifth of presternal scrapings; he did not find the organism in scrapings from normal joint flexures. In his cases of seborrhoeic dermatitis it was found in all seven scalp scrapings, and in less than one-third of scrapings from other seborrhoeic areas.

TABLE I.

#### Group 1: Normal Skin Surfaces.

|           |                                 | Culture attempts. | <i>P. ovale</i> grown (%) |
|-----------|---------------------------------|-------------------|---------------------------|
| Adults:   | Scalps . . . . .                | 11                | 6 (54.5)                  |
|           | Post-auricular folds . . . . .  | 9                 | 1 (11.1)                  |
|           | Central chest or back . . . . . | 13                | 3 (23.1)                  |
|           | Elbow folds . . . . .           | 15                | 3 (20.0)                  |
| Children: | Scalps . . . . .                | 33                | 10 (30.3)                 |
| Totals    | . . . . .                       | 81                | 23 (28.4)                 |

#### Group 2: Seborrhoeic Lesions.

| Site.                           | Clinical state.                      | Culture attempts. | <i>P. ovale</i> grown (%) |
|---------------------------------|--------------------------------------|-------------------|---------------------------|
| Scalp . . . . .                 | Pityriasis capitis . . . . .         | 35                | 16 (45.7)                 |
|                                 | *Seborrhoeic dermatitis . . . . .    | 15                | 0 ( 0.0)                  |
|                                 | Infantile eczema . . . . .           | 14                | 6 (42.8)                  |
| Post-auricular folds . . . . .  | Dry scaling only . . . . .           | 4                 | 2 ( 2.0)                  |
|                                 | *Inflamed and/or exudative . . . . . | 7                 | 0 ( 0.0)                  |
| Central chest or back . . . . . | Chronic petaloid plaque . . . . .    | 17                | 8 (47.1)                  |
|                                 | *Acute inflammation . . . . .        | 11                | 2 (18.1)                  |
| Joint flexures . . . . .        | *Acute inflammation . . . . .        | 13                | 0 ( 0.0)                  |
| Face . . . . .                  | *Scaly and inflamed . . . . .        | 6                 | 0 ( 0.0)                  |
| Totals . . . . .                | . . . . .                            | 122               | 34 (27.8)                 |

#### Group 3: Miscellaneous Scaly and Greasy Conditions.

| Disease.                      | Culture attempts. | <i>P. ovale</i> grown (%) |
|-------------------------------|-------------------|---------------------------|
| Psoriasis . . . . .           | 8                 | 2 (25.0)                  |
| Pityriasis rosea . . . . .    | 3                 | 1 (33.3)                  |
| Pityriasis alba . . . . .     | 2                 | 0 ( 0.0)                  |
| Tinea versicolor . . . . .    | 4                 | 0 ( 0.0)                  |
| Ichthyosis . . . . .          | 1                 | 1 (100)                   |
| Rosacea . . . . .             | 1                 | 1 (100)                   |
| Parkinson's disease . . . . . | 2                 | 1 (50.0)                  |
| Comedones . . . . .           | 2                 | 0 ( 0.0)                  |
| Seborrhoeic warts . . . . .   | 2                 | 0 ( 0.0)                  |
| Alopecia totalis . . . . .    | 2                 | 2 (100)                   |
| Totals . . . . .              | 27                | 8 (29.6)                  |

\* Features of acute inflammation were present.

More recently Portnoy (1950) has reported finding *P. ovale* in 97 of 116 normal scalps, and in all 84 scalp scrapings taken from seborrhoeic subjects.

*Present investigations.*—Specimens were taken from three main groups of cases to determine the incidence of the living organism (Table I).

Each specimen was sown within seven days of collection on a culture plate of the new medium, and on one to which penicillin had been added. The plates were incubated at 37° C., and examined after seven and fourteen days. Each colony was checked microscopically.

The results are shown in Table I.

Group 1: The incidence of positive growth was slightly below the positive microscopic findings of previous investigators. The chance of a positive culture in scrapings from quite normal skin was somewhat reduced by the smaller quantity of tissue obtainable.

In the specimens taken from normal children's scalps no positive results were obtained from four infants under one year, and thereafter the incidence gradually increased. As distinct from the adult findings, when culture was successful from children's scalps it was usual to grow a colony from each skin flake.

Group 2: The most striking feature in this series was the difficulty in culturing the organism in cases of seborrhoeic dermatitis where active inflammation was present. In these cases the commonest organism cultured was a penicillin sensitive, coagulase negative white staphylococcus. In contrast to this finding was the apparent ease of culture in the cases labelled pityriasis capitis (which indicated simple scaling of the scalp or dandruff), and in the other more chronic seborrhoeic manifestations. In each of the flexural and facial cases recorded there was some other evidence of seborrhoeic dermatitis. The high incidence in cases of infantile eczema, which included seborrhoeic and atopic types, is noteworthy, especially since all the positive results were from babies less than one year old.

Group 3: The general incidence in other scaly and greasy conditions of the skin is closely comparable with that in normal and seborrhoeic skins. In these cases the scrapings were not taken from the scalp except in the two cases of alopecia totalis, which presented very greasy scalps and gave positive results. From all the four cases of tinea versicolor included in this series *P. orbiculare* was grown. (It is hoped to make this the subject of a separate communication at a later date.) There was no type of growth in the two cases of pityriasis alba.

*Summary of culture results.*—1. The incidence of positive cultures in all three groups is extremely close. This is especially so in Groups 1 and 2, as the number of specimens from the different sites in these two groups was roughly proportionate.

2. Positive cultures were much fewer in the acute seborrhoeic dermatitis cases (3·8%) than in the chronic lesions (46·4%).



3. While the organism was not cultured from the scalps of normal babies under one year, it was grown from six of the nine cases of infantile eczema under that age.

During the course of these culture experiments, where both a penicillin-sensitive staphylococcus and *P. ovale* were cultured, it was unusual to find any colonies of the latter on plates where the coccal growth was profuse. This suggested that, *in vitro* at least, either the cocci had an inhibitory action on the pityrosporum, or the presence of the latter encourages coccal growth. Stroke cultures, however, of both organisms on the same plate disproved any symbiotic or antibiotic action.

The difficulty in culturing the pityrosporum from cases of acute seborrhoeic dermatitis prompted the idea that it might even play a protective role and benefit patients with this disease. Two patients in the acute stage of the disease were therefore treated with an emulsion of living organisms applied twice daily for a week, but this failed to help the condition.

Since it seemed unlikely that *P. ovale* was responsible for any acute skin disease, it was considered justifiable to proceed with patch tests with living organisms on human subjects.

*Patch tests.*—An attempt was made to produce seborrhoeic dermatitis in four normal persons, twenty-four seborrhoeic subjects, and five patients with infantile eczema.

A quantity of young live *P. ovale*, cultured from the patient's own skin, was applied to normal skin in the centre of the chest. The organisms were kept in contact with the skin for one or two weeks by means of a permeable nylon adhesive dressing. The organism could be regrown thereafter. In some cases the skin was gently scratched before the patch was applied. In the earlier tests a control patch was also applied, but after several negative results this was omitted, and later on two types of tests were sometimes done on the one individual.

TABLE II.

| Type of test.                                                              | Number of tests. | Results. |
|----------------------------------------------------------------------------|------------------|----------|
| Seven days' application . . . . .                                          | 22 .             | Negative |
| Fourteen days' application . . . . .                                       | 5 .              | do.      |
| Skin scraped before seven days' application                                | 9 .              | do.      |
| Staphylococcus applied after seven days' contact test . . . . .            | 12 .             | do.      |
| Staphylococcus applied after scraped skin contact for seven days . . . . . | 3 .              | do.      |
|                                                                            | —                | —        |
| Total . . . . .                                                            | 51 .             | Negative |

In twelve cases, after removal of the patch test, coagulase-negative *Staphylococcus albus* was applied on the same site for seven days, on the assumption that the lipophilic *P. ovale* might use up the protective sebum and so undermine the resistance of the skin. This view was recently expressed by Pollock *et al.* (1949) in discussing the pathogenicity of lipophilic diphtheroids cultured from the skin.

However, all patch tests gave negative results, and the organism did not seem to undermine the resistance of the skin to a white staphylococcus (Table II).

Intracutaneous tests were not done as the organism could not be demonstrated histologically in the dermis in seborrhoeic dermatitis: and, furthermore, the course of this disease suggests a superficial spread. It was considered that even a positive reaction to an intracutaneous injection would not help in proving the pathogenicity of this organism.

#### *Conclusions Drawn from Human Experiments.*

1. The organism can be cultured from normal adults as frequently as from seborrhoeic subjects.
2. It is not usually found alive in cases of acute seborrhoeic dermatitis.
3. It is often cultured from the scalps of babies under one year who suffer from infantile eczema: but the disease cannot be reproduced by application of the organism to the child's skin.
4. It was not found possible to produce any reaction by the application of the patient's own strain of organism to the skin.

#### SUMMARY.

1. A new culture medium is described for the easy culture of the genus *Pityrosporum*.
2. Some new features of the morphology, reproduction and staining reactions of *P. ovale* are described.
3. The organism has been cultured from healthy animals, and experiments on laboratory animals suggest that it is non-pathogenic to them.
4. Human experiments indicate that it is a non-pathogenic saprophyte, which fails to fulfil Koch's postulates as the cause of seborrhoeic dermatitis.

It would be difficult to mention all the many friends who have advised and assisted me in this work during the past three years. Each one must know my indebtedness, and to all I proffer my grateful thanks.

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## ITCHING IN TENSION STATES.

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ITCHING is a common and important symptom in skin disorder. It is the purpose of this paper to show that emotional tension may, in some patients at least, stand in a causal relationship to itching of the skin; that is, the symptom appears when the patient is subjected to an unusual stress, its severity varies with the degree of tension, and relief of tension by therapy produces a parallel improvement in itching.

The psychophysical mechanism of itching and its manifestation in the skin will be illustrated by three groups of cases: (i) Itching with excoriation of the skin, (ii) simple pruritus, and (iii) itching with lichenification. In all these itching is the core of the disorder, and without it the skin lesions would be of little importance. The relationship of physical symptom to state of mind is most obvious, as a rule, in the first group, and least in the third. It is our belief that emotional tension was the principal determinant of the illness in all the cases we shall describe.

The patients who are the objects of this study cannot be considered a random sample of patients with these three disorders, since they were referred in the first instance to one of us (D. O'N.) by members of the staff of St. John's Hospital for psychiatric appraisal. We do not contend that emotional tension has always so important a part in the aetiology of itching, but only that it sometimes has; in this event the treatment of the illness is the treatment of the cause.

### CLINICAL STUDY.

The whole series contains 30 patients. There are two children, aged 8 and 12; the age range of the remainder is 24-66, and the mean age 41.6 years. Ten patients are male and 20 female.

#### GROUP 1.—*Itching with Excoriation of the Skin.*

This group contains 5 adults and 1 child, a girl of 8. The skin lesions were irregularly scattered excoriations, usually on the arms and legs, but in one case the distribution included the trunk. They were small and nondescript and not of the well-defined linear type seen in some cases of dermatitis artefacta.

In all six patients the tension-itch-scratch mechanism was very plain.

A woman of 28 was referred for examination because of excoriations on the trunk and limbs. She said: "I've had two children rather quickly. This is the trouble."

The first child was unplanned, and when she discovered herself to be pregnant with the second she was much upset: itching began at the fifth month of pregnancy. The children were energetic and noisy, and their management wore her down. "I feel I can't cope, and get irritable." She had not planned or desired either child, and her conflict was less with the children themselves than with her own feelings of resentment towards them. "When I get agitated the skin gets itchy; then I scratch, and that makes it worse." A subsidiary cause of tension was her husband's jealousy: "He's jealous of everybody, his own friends, even his mother; I have to be on my guard." Itching was usually worse at the time of the menstrual period.

She attended as an out-patient for over 4 months. She was encouraged to give free expression to her feelings, and was reassured about her handling of the children. Irritation of the skin and scratching subsided, and when she was last seen neither was very troublesome.

The predominant affect in the causal complex of this patient's skin disorder was resentment; resentment directed at her husband, her children, and herself. Her hidden feelings for the first two of these objects were not allowed into the open, and she "punished" only herself by scratching.

Resentment was also prominent in the other five patients in this group.

A man of 39 had risen by tact and industry to a good position in one of the public services. He thought that he could do better still, but his way was blocked by a regulation of the service—"red tape." He was annoyed and bitter about this frustration, and itched.

Four of these patients were much improved by treatment and two unchanged. One of the latter was the child (P. K—); although she and her mother (Mrs. K—) attended the Child Guidance Clinic steadily for a number of months, she still scratched as much as ever. The child and her mother lived in a house belonging to Mrs. K—'s parents, who were rather forbidding and intolerant of untidiness, so that the child felt cooped-up. It seemed probable that her tension state would continue until they contrived to find another place to live.

The other was a woman of 46 who lived in a flat which she did not like. On the floor above were a couple who quarrelled constantly and often argued into the early morning. She suffered in silence under this burden, did not like to complain, and boiled with pent-up anger. No other flat could be found for her; she could neither shut out the noise above, nor accept its existence with equanimity and continued to itch.

#### GROUP 2.—*Simple Pruritus.*

This group is made up of 6 cases of pruritus ani, 3 of pruritus vulvae, and 1 of itching of the head and cheek. There were 5 males and 5 females.

No visible skin lesions were present in this group.

Some dissatisfaction in the field of sex adjustment was evident in 4 of the 6 patients with pruritus ani.

A man of 42 had begun to suffer from itching while he was serving in the Army in England, but away from his home. He had endured much guilt over the habit of masturbation since his boyhood, and had tried to establish a harmonious physical relationship with his wife, but his sexual appetite was greater than hers, and he was aware of intermittent waves of sex tension. He was an intelligent and thoughtful man, and drew up for our benefit a chart of the variations in itching from day to day, showing their associations with his feelings. The peaks of itching coincided with the peaks of sex tension, and itching was considerably less after intercourse.



Anxiety from other sources also influenced the itching in these 4 patients, and anxiety alone appeared to be the main causative factor in the other two.

In one of the three patients with pruritus vulvae itching made its first appearance at a time when the patient was discontented with her marriage. She had no pleasure from sexual intercourse, and looked back with longing to a brief affair with another man which had taken place while her husband was in the Army. With this man she had experienced a sense of fulfilment that was absent from her marriage. Scratching, for this woman, seemed to supply a sexual gratification which coitus did not, and at the same time it was quite plainly a self-punishment: "I scratch myself raw." In another patient with pruritus vulvae, itching was linked to a strong irrational fear of pregnancy and childbirth; when this fear was aroused, as by conversation on the risks of childbearing, she suffered severe irritation.

Itching of the scalp and forehead, in a woman of 59, was one symptom of an anxiety depression brought about by a domestic conflict: the dominant emotions were anxiety and grief.

Therapy was less effective in this group of simple pruritus than in either of the other two groups. Four patients were much improved, and four improved. One of these—a man of 66 with pruritus ani—improved, but relapsed after an operation for removal of the prostate. Two patients did not improve at all. One, a woman of 62 with pruritus ani, was not benefited by psychotherapy over several months; since there was an element of depression present, it was decided to employ electroconvulsive therapy. After two shocks the itch vanished, but the patient became more depressed, and so apprehensive that treatment had to be stopped. This example demonstrates the axiom that where a symptom is fulfilling some function in the psychic economy it cannot be forcibly removed without upsetting the mental equilibrium. The decision to give ECT to this patient was a mistake, and its result should have been foreseen.

In most of these patients scratching or rubbing of the skin had become an auto-erotic activity, and itching had a sensual or frankly sexual meaning. Perhaps because of its roots in a powerful instinctual urge, the symptoms were more obstinate and less readily modified by treatment.

### GROUP 3.—*Itching with Lichenification.*

There were 14 patients in this group—a girl of 12, 8 women and 5 men.

Skin lesions were usually an area of lichen simplex chronicus (Vidal) type. The sites were very varied, the commonest being the nape of the neck in women.

The affective content in these patients was a blend of anxiety and resentment, the former being uppermost in 9, and the latter in 5.

A woman of 37 had an area of lichenified skin on the forearm which itched intensely. When her husband came home from the war he had changed, and she was disappointed: "We had different lives; I expected too much; it clashes. I have to catch him in a good mood. It has got me down. I associate all this with the rash. Can't relax. Have to see the child doesn't get on his nerves. I flare up too. Don't quarrel openly. He is cold and logical; very irritating."

This patient was kept under observation for a year: attacks of itching were seen to accompany disagreements with her husband, mainly about money matters and the upbringing of the child. She was encouraged to take a job and to make herself in

some degree independent of him : she prospered and felt more secure. At her last visit the itching was much less.

The woman resented her husband's absorption in his business affairs, yet she was afraid to express her feelings lest she alienate him. He was aware of her inward tension, and defended himself against it by withdrawing still more into his shell. Taking up work gave her self-confidence and lessened the emotional demands she made upon him : hence both felt more contented.

A woman of 44, with some musical talent, said to us : " This rash is a form of artistic frustration. I never itch when I am playing the violin."

The overflowing of tension into the skin was most obvious in the girl of 12, and little exploration was needed to show that one of the main sources was rebellion against parental authority.

No very great resistance was encountered in the investigation of these patients, and all were ready to unburden themselves to an uncritical audience. Eleven were much improved by treatment and one improved. Two were unchanged, one did not attend regularly for treatment, and one was an unhappy, hypochondriacal man in late middle life who could not make the adjustments essential to recovery.

#### CORRELATION OF MENTAL STATE AND PHYSICAL SYMPTOMS.

The onset of the skin disorder, in 23 of the 30 patients, occurred at a time of especial stress for the patient. Relapses and exacerbations, in all 30, were related to situations arousing prolonged tension which the patient could neither dissipate nor avoid. These correlations were not always apparent at the first interview, and a few patients had to overcome their own resistance to accepting the fact of emotional influence upon their symptoms before they were able to account for the variations in the illness. This resistance was not a serious hindrance to investigation or therapy, and it was less than in some other stress disorders, such as migraine. No patient in this series broke off attendance at the clinic because of it, though one patient did not consider her disorder (lichen simplex chronicus) important enough to warrant her coming regularly.

No constant personality pattern was observed in these patients. Other symptoms in the physical or mental sphere were reported by 21 patients : they include depression, fatigue, poor sleep, irritability, bodily pains and indigestion. These may be regarded as part of the total response to stress, and under treatment they improved *pari passu* with the itching.

A common pattern of events in our patients was this : at night, warmth and contact with bed-clothes stimulate the skin ; emotional tension, which has been held in check by various defences during the day, mounts ; the skin itches, and the patient scratches. Scratching irritates the skin, increases itching, and causes further scratching. The act of scratching then comes to fulfil one of two functions : it may provide a satisfaction which the patient cannot achieve by other means, or it may serve as a form of punishment. The

feeling-state which accompanies scratching is linked to sexual satisfaction, and its pleasurable quality is sometimes quite overt; more often it is masked by complaints about the itching. The sexual function of itching is most marked in patients with pruritus of the anus and vulva, and it is plain that sexual feeling which is denied its normal outlet may come to expression in this way. The patient who feels guilt because of his hostile impulses towards his fellows may punish himself by scratching and injuring his own skin. This mechanism was important in the first group.

One of the Group 3 patients, a woman of 24, was treated by psychotherapy at weekly interviews for 6 months. In the early stages of the treatment the relief of tension afforded by the interview removed the itching for 2-3 days, then it mounted up again. As she progressed in insight the phases of freedom lasted longer. As her state was followed from week to week, attacks of itching could be traced without difficulty to disturbing events. The main foci of tension were friction in the family circle and boredom at her work. When last seen she had little itching, felt more confident, and said that she understood herself better.

In this patient, and in some of the others as well, a latent period was often interposed between the causal stress and the appearance of itching. For example, itching might become noticeable in the evening or at night after a quarrel or disappointment during the day. The interpretation of this delay may be that the painful feelings which set up itching are kept under control by day, but with the release of inhibition which accompanies fatigue they rise up to the surface.

The reasons for the choice of the skin as a vehicle of discharge of tension were as a rule obscure. A remarkable transmission of symptoms was observed in P. K —'s family (Group 1): The child, her mother and her grandmother all had the same intense general irritation of the skin, and all three were anxious; the scratching habit had been inhibited in the two adults. Pruritus ani, in one patient, began when he had a *fissure-in-ano* which itched. In only 5 patients was there a family history of skin disorder.

#### ITCHING AS A BODILY SIGN OF EMOTIONAL TENSION: CRITERIA FOR DIAGNOSIS.

The following diagnostic criteria may be suggested:

1. Correlation of time of onset and course of the itching with events which arouse in the patient strong feelings which he cannot handle.
2. Presence of a tension state, which may demonstrate itself in other ways besides itching.
3. Relief or disappearance of itching with measures which enable the patient to deal more effectively with the stress-provoking situation.



In some patients with pruritus and no other signs of tension may be evident and the patient appears content, except that he itches. Here the symptom may be difficult to influence: it is as though the organism is employing skin stimulation (by scratching or rubbing) to satisfy a need, and is unwilling to give it up.

When the patient does not admit to being anxious, we cannot therefore assume that his symptoms are not psychogenic. He may be reluctant to speak of his personal affairs, and deny anxiety: he may be genuinely unaware that he is anxious, since the unpleasant feelings are kept out of consciousness by his defences. It is then the task of the physician to bring him to a realization of the meaning of his illness by relating its course to his life story.

#### TREATMENT.

The psychotherapy of the itching patient does not differ from psychotherapy in other stress disorders. Although a great deal can be done to alleviate mental suffering and physical discomfort, we do not yet know enough of the possibilities and limitations of treatment to estimate its duration with certainty, or to predict how the disorder will behave in the successive stages of the therapeutic process.

Time is the principal limiting factor. Those of our patients to whom we could devote more time did well, and the rest might have done better had they attended more often and for longer interviews. The use of drugs, such as Amytal and Phenergan, is determined by the time factor: where the patient was having regular therapeutic sessions with progressive relief of tension, drugs were not employed. Where tension was severe and sleep broken sedatives were used, and they were of some value for relief of anxiety in the older patient who could not be expected to make much response to psychotherapy.

Changes in the patient's "world," whether they occurred through our agency or not, often had a therapeutic bearing. One of our patients with pruritus decided to go to Australia, and from the moment of this decision was no longer troubled by itching. We were able to profit from the skill and experience of the almoner, who interviewed many of the patients and helped them with their material problems. A few patients were sent to the Rehabilitation Centre at Roffey Park, and profited greatly from the treatment which they had there.

#### CONCLUSIONS.

Itching of the skin, as a single symptom or in association with excoriation or lichenification, can behave as a stress disorder.

Often, though not always, the patient has insight into the nature of his own symptoms, and a high degree of resistance to investigation and treatment is

rare. His insight can be extended and utilized for his own good by simple psychotherapeutic measures such as can be applied in an outpatient clinic.

Considerable benefit can be expected in the majority of patients from this treatment.

#### SUMMARY.

The results of investigation and treatment of 30 patients with itching of the skin are described. Six of these had excoriations of the skin, 10 had simple pruritus without skin lesions, and 14 had itching with lichenification.

Emotional tension was the principal determinant of the illness in all the patients. In 23 patients the onset of the skin disorder occurred at a time of special stress. Relapses and exacerbations, in all 30, were related to situations arousing prolonged emotional tension.

After treatment 19 were much improved, 5 improved, and 6 unchanged. The patients who benefited least from treatment were those with simple pruritus.

We are indebted to members of the staff of St. John's Hospital for Diseases of the Skin for referring patients for investigation and treatment, and for advice and help in the preparation of this paper.

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## DERMATITIS HERPETIFORMIS IN CHILDREN.

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AMONG the bullous dermatoses dermatitis herpetiformis occupies a special place. Since its description by Duhring in 1884–1891 there has been a considerable controversy as to its nature and as to whether it is a separate entity. In the course of time certain diagnostic criteria were added, and finally the disease was constituted a clinical entity, placed between the erythema multiforme and the pemphigus groups. The issue is more complicated in childhood, where all the differential diagnostic points such as polymorphism, the severe pruritus, the residual pigmentation, the tendency to recurrences, the eosinophilia in blood and bulla-fluid, the hypersensitivity to halogens and finally the response to sulphonamides, especially sulphapyridine, are less reliable and even entirely lacking. The accepted view of the dermatologist, therefore, is that dermatitis herpetiformis is rare in childhood.

During the last thirteen years I have had the opportunity to observe ten cases of this disease in children. All were admitted to hospital for investigation and treatment and were followed up after discharge.

Four of them will be reported here in detail.

### CASE REPORTS.

CASE I.—D. B—, a 5-year-old boy, was first seen 4 December 1939 because of a papulo-vesicular eruption of five days' duration. The history revealed nothing significant. A tentative diagnosis of dermatitis bullosa acuta was made and treatment was started accordingly. The eruption, however, became more severe, requiring his admission to hospital on 21 December.

*On admission.*—Physical examination revealed a rather thin and poorly nourished boy, appearing acutely ill. The temperature was 38° C. (100·4° F.). The internal organs and the visible mucous membranes were intact. The skin was involved in many places, particularly on the head, neck and buttocks. The eruption consisted of pinkish soft papules and grouped vesicles in various stages of development. The fresh ones, the size of a match head to a split pea, were tense and translucent. Others were wrinkled and flaccid. Still others were burst and transformed into superficial greasy and partly purulent crusts. There were also a number of variously sized and shaped circinate plaques which were apparently formed by the coalescence of burst blisters (Fig. 1). The cervical and inguinal lymph-nodes were distinctly palpable and some were tender. There was little or no itching.

*Laboratory data.*—The urine was normal; Hb 50%; R.B.C. 3,000,000; W.B.C. 13,700 (polys. 52%, lymphos. 30, monos. 15, eos. 2, basos. 1%). There were no eosinophils in the contents of a blister. A culture from a vesicle yielded *Staphylococcus aureus*. Auto-inoculation of blister fluid was negative. Patch tests with 1% quinine sulphate and 4% formalin were negative, and with 0·1% mercuric chloride



and 5% tincture of iodine, positive. A patch test with 30% potassium iodide was negative after 24 hours, and positive after 48 hours. Nikolsky's sign was not present. Dermatitis herpetiformis was considered.

*Treatment and course.*—Potassium permanganate baths and a bland paste consisting of 1% ichthammol in zinc oxide ointment was applied locally, sodium thio-sulphate was given orally, and crude liver extract was injected intramuscularly.



FIG. 1 (Case I). On the left arm small vesicles arranged in rings. On the scalp and back burst blisters and impetiginous lesions.

After a week no improvement was noted. The temperature fell a little, but new discrete and grouped vesicles continued to arise almost daily in the immediate vicinity of the old lesions. After a further two weeks the skin showed scaling and impetiginisation in many places. Fresh papulo-vesicles continued to appear, although in less intensity, mostly in the healed areas. In several places the vesicles were arranged in semicircles and even circles. Itching was minimal. A blood count revealed a leukocytosis of 11,000 cells with 7% eosinophils. The patient was given

sulphanilamide 0.5 g. three times a day, and potassium arsenite (Fowler's) solution, 1 minim increasing to 3 minims three times daily. After two weeks the temperature returned to normal and remained so. Many lesions dried up, leaving only scaling brownish crusts and pinkish spots. New lesions appeared only occasionally.

On 9 February 1940 the boy was discharged from hospital, after a stay of 51 days. His skin presented a mottled appearance, depigmented, pinkish and brown maculae mingling with scattered dry scales.

He was followed up in the clinic for 6 months. There was no recurrence. When he was re-examined a year later he still had slight pigmentation over most of the parts formerly affected.



FIG. 2 (Case II).—Small grouped vesicles widely and symmetrically distributed.

**CASE II.**—B. P.—, a 2-year-old boy, was admitted to hospital on 20 August 1948 with a generalized eruption accompanied by constitutional symptoms. According to the mother the child's birth and development were normal. He was breast fed. The present illness started suddenly with tonsillitis and fever two weeks prior to admission. After several days the child developed some lesions on the face. The physician prescribed 5% ammoniated mercury ointment. The lesions rapidly spread to involve wide areas of the body.

*On admission.*—Physical examination revealed a fairly well-nourished boy who was uncomfortable, scratching and appearing acutely ill. The temperature was 38.5° (101.3° F.). There were no internal symptoms or adenopathy. The skin was involved symmetrically in multiple areas, worse over the neck, genitalia, arms and legs, particularly on the forearms and legs (Fig. 2). The eruption had a distinctly vesicular character, the blisters being closely grouped and in various stages of evolution. Recent ones, the size of a match head, were moderately tense, contained clear fluid, and arose from a somewhat erythematous base. Others were flaccid. There were also many denuded and slightly moist areas with remnants of ruptured blisters at the periphery.

*Laboratory data.* The urine was normal. A complete blood count revealed nothing abnormal, except a leucocytosis (13,000) with 6% eosinophils. There were 7% eosinophils in the blister contents. Culture of serous fluid aspirated from a bulla

was sterile. Nikolsky's sign was negative. Patch tests with 5% ammoniated mercury and 30% potassium iodide ointment were negative. A tentative diagnosis of erythema exudativum multiforme was considered.

*Treatment and course.*—Penicillin, 20,000 O.u., was given eight times a day. Benadryl, 25 mg. three times daily, was given orally. Baths, talcum and soothing ointments locally. After several days 120 c.c. plasma were given. During two weeks there was no noticeable improvement, and the temperature continued to range around 38° (100·4° F.). Many lesions dried, but new crops of papulo-vesicles appeared. The hands and arms, which were now diffusely involved, showed an eczematous appearance. The lack of impetigo and lymph-node enlargement was striking. Penicillin and Benadryl were discontinued and sulphapyridine 0·5 g. four times daily was administered. After five days a septic fever ranging from 36·5°–38·5° (97·7–101·3° F.) developed. Sulphapyridine was stopped and penicillin renewed. After a week there was a slight improvement and the temperature became subfebrile. The skin showed desquamation, but new vesicles appeared in the healed areas. Some bullae reached the size of a cherry.

After 40 days' stay in hospital the child was discharged at the request of the parents.

I continued to follow up the child. He suffered from more or less frequent attacks of itchy papules and vesicles, located mainly on previously affected areas and accompanied sometimes by fever, for two years. Recently the attacks became milder and had the appearance of strophulus.

CASE III.—G. J., a girl aged 18 months, was admitted to hospital on 23 January 1950 because of a widespread cutaneous eruption.

The history revealed that the child was normally delivered and was breast fed, vaccinated and developed normally. Two months previously she had suffered from laryngotracheobronchitis and was treated with penicillin, 100,000 O.u. twice daily for 5 days. Five weeks prior to admission she had developed otitis media and a few days later a vesiculo-pustular eruption, first on the neck and later on other areas. A pediatrician considered varicella and a dermatologist impetigo bullosa. Penicillin was again given, 50,000 O.u. 5 times a day for 4 days, and the eruption cleared. After about 10 days a new crop of lesions appeared, rapidly spread and the child was sent to hospital.

*On admission.*—The child was well developed and well nourished. The temperature was 37·8° (99·8° F.). Physical examination revealed no abnormality except for the skin, which was widely involved, especially the scalp, back, breast, abdomen, genitalia and buttocks. The palms, soles and the visible mucous membranes were spared. The scalp was covered with thick dirty-brown crusts, presenting the picture of impetiginous seborrhoeic dermatitis. Irregularly distributed over the trunk were numerous papules, vesicles, crusted impetigo-like lesions and well-defined round and oval plaques from 0·5 to 4 cm. in diameter. Several plaques coalesced, forming serpiginous borders. The plaques were covered with moist and dried crusts and scales. The lymph nodes in both cervical and inguinal regions were enlarged and somewhat tender. There was moderate pruritus.

*Laboratory data.*—The urine was normal. Complete blood counts were normal with the exception of a leucocytosis of 11,600 with 5 to 9% eosinophils. No eosinophils were found in the blister fluid. Culture of aspirated fluid of a blister revealed *Staphylococcus aureus*. Nikolsky's sign was negative. A patch test with 30% potassium iodide ointment was strongly positive after twenty-four hours. Histological examination of a papule by Dr. M. Loewenthal showed slight hyperkeratosis and parakeratosis. Vesicles were noted in the papillary layer surrounded by infiltration with eosinophils and lymphocytes. The blood-vessels showed inflammatory cuffing in places.

A diagnosis of juvenile Dühring's disease was made.



*Treatment and course.*—Potassium permanganate baths and soothing ointments were administered locally, and 0.5 g. sulphapyridine was given twice daily by mouth. After a week the temperature still showed mild irregular elevations to 38° C. Many lesions dried but new papulo-vesicles continued to develop almost daily. Several vesicles appeared to arise from perfectly normal skin. The dose of sulphapyridine was doubled. After an additional week the patient's condition improved considerably: the pruritis became milder and the pyoderma cleared up almost entirely. The plaques showed definite central clearing, while there were papules and closely aggregated, partly intact and encrusted vesicles in the periphery.

After a month's stay in the hospital the patient's skin was practically free from new lesions and sulphapyridine was stopped. Within a few days a new crop of pruritic papulo-vesicles appeared, which were located on previously affected regions and also on the place where the patch test with iodine had been applied. After sulphapyridine, 1½ g. daily, the lesions rapidly cleared. Only the scalp presented crusts. Treatment was again discontinued, and when after a week a relapse occurred, sulphathiazol was administered, 2 g. daily, but without effect. Improvement followed the administration of sulphapyridine.

On the fiftieth hospital day the patient's condition was good. She had gained weight but looked pale. A blood-count showed 50% Hb and 2,700,000 red cells. Fowler's solution in increasing doses, 1 to 3 minims, 3 times daily was prescribed.

On 17 March 1950 the child was discharged in good condition with numerous pinkish brownish spots, and with the advice to continue arsenic.

The child remained under observation. Frequent episodes of grouped pruritic papulo-vesicles occurred, which were rapidly controlled by 1 to 1½ g. sulphapyridine. She was last seen on 29 March 1951. Both axillae and the genitalia presented grouped herpes-like vesicles on an erythematous base. This outbreak had developed about a week after acute otitis media.

CASE IV.—B. T.—, a girl aged 3 years, emigrated from Yemen one year ago and was admitted to hospital on 27 December 1950 because of a widespread eruption of six months' duration.

Physical examination revealed a fairly well developed and nourished child, not acutely ill. Except for the skin no abnormality was found. The eruption was symmetrically located on the buttocks and extremities and was most pronounced on the thighs. There were many irregularly outlined, variously sized and shaped red brown plaques which were studded with erythematous lentil-sized papules and discrete vesicles at various stages of evolution. Some were tense with a clear fluid, others were flaccid with a milky or yellow content. There were many eroded areas and impetiginous lesions. The pruritus was minimal. There was a decided inguinal lymphadenopathy.

*Investigations.*—The urine and blood count were normal. Blood eosinophils were 2.7% on several occasions. Eosinophils from bulla fluid varied from *nil* to several. Cultures from the contents of fresh vesicles were sterile while older bullae yielded *Staphylococcus aureus*. A patch test with 1:1000 mercuric chloride was positive. Patch tests with 30% potassium iodide on an uninvolved area and on a previously affected area were negative. Nikolsky's sign was negative. Histological examination of a fresh papulo-vesicle (Dr. M. Loewenthal) showed the epidermis to be separated from the papillary layer on the border as a result of an apparently ruptured vesicle. In the upper part of the cutis a little infiltrate was found.

*Treatment and course.*—Soothing lotions were applied locally and sulphapyridine, 3 times daily, was given by mouth for two weeks. Improvement was noticeable. Treatment was discontinued to see whether relapse would follow, and within one week a new outbreak occurred. Trisulfa (sulphadiazine 0.166 g., sulphamerazin 0.166 g. and sulphathiazole 0.166 g.) was prescribed, 2 g. daily, but new vesicles continued to appear, several coalescing to bullae the size of a hazel nut. Many vesicles were

closely arranged, forming semicircles and circles. No suppuration was observed. After a month's stay in hospital aureomycin was started: 50 mg. was given 4 times daily for the first 3 days, and 100 mg. 5 times daily for the next 3 days, but without effect. Sulphapyridine was resumed, 2 g. a day, with little change. On the fiftieth hospital day potassium arsenite (Fowler's) solution diluted 1:3 was prescribed in increasing doses from 1.9 minims, 3 times daily. After ten days improvement was noted. The old lesions desquamated and no fresh lesions developed for several weeks.

The child was discharged on 17 March 1951 with only residual pinkish-brown patches. She visited the Clinic twelve days later with a new attack of erythematous papules, vesicles and bullae which had appeared several days previously. Again sulphapyridine was prescribed with the advice to continue for a month. The child was readmitted to the hospital on 23 May 1951. She showed discrete red papules, many grouped rather tense vesicles, isolated large bullae, ruptured bullae and impetiginous lesions (Fig. 3). Routine laboratory tests were normal. Sulphapyridine, 2 g. a day was given: the eruption gradually cleared and the patient was discharged on 21 June practically free of symptoms.



FIG. 3 (Case IV).—On the buttocks and thighs grouped fresh and burst blisters.

#### DISCUSSION.

The ten children, five boys and five girls, were of various ages: two 1-year old, two 2-year, two 3-year, three 6 and one 13-year-old. Most of them had been breast fed. All were well developed and adequately nourished. The past history of the older children revealed one or two infectious children's diseases. The present skin condition developed apparently suddenly without seasonal variation and unconnected with vaccination. Several authors, e.g., Bowen (1905), Fasal (1946), and Maynard (1946), have considered vaccination as an aetiological factor in dermatitis herpetiformis in children. No reliable information could be obtained concerning one child. In the 13-year-old boy the disease developed soon after rambling in fields and among bushes. In one infant the disease appeared shortly after washing the head with petroleum

for pediculosis. In the remaining seven children an acute infectious disease preceded the outbreak of the eruption. In all cases the condition became progressively worse and required hospitalization within several weeks.

*Clinical features.*—The eruption was disseminated, with a tendency to symmetry. Although no rule could be given about the distribution, certain areas were predominantly involved, namely the face, the neck, the extremities, and especially the genitalia and the buttocks. The palms, the soles and the visible



FIG. 4. Typical bullae arising from a non-inflammatory skin.

mucous membranes were always free. Each case was distinguished by its own special localization, which usually remained constant during the course of the disease, even in the relapses; new lesions appeared in previously affected areas or in their immediate vicinity.

Polymorphism, a prominent feature of Duhring's disease, was not present in our cases. Urticarial wheals were observed in one case only. The main elementary lesions were papules and vesicles. The lentil-sized papules were soft and became softer within a few days. Sometimes their transformation



into vesicles could be seen. The fresh small vesicles arising from normal or inflamed skin were tense and translucent: they enlarged and reached the size of a pea or hazel-nut and even larger (Fig. 4). Herpetetic grouping of the vesicles was characteristic, and in several places they were aggregated to form semicircles and circles. The vesiculo-bullae showed no tendency to burst readily, but when they finally ruptured they left raw denuded surfaces with remnants of the blisters at the periphery. Others dried, forming scales or crusts. Here and there impetiginisation occurred. As the disease progressed the lesions often coalesced to form polycyclic plaques, variously sized and shaped. After desquamating and healing there remained pinkish-brown maculae.

Of the various subjective symptoms of dermatitis herpetiformis—burning, pain and pruritus—only pruritus is apparent in the child because of the consequent scratching, which even the youngest child may show considerably. Of the ten cases only one child suffered from severe itching. In four the itching was moderate, in three slight, and in the remaining two minimal. Therefore scratch marks were never prominent and secondary pyoderma was not usual.

On the other hand, there were some features usually not familiar in adults. The general health was affected. Malaise and fever, ranging from 37.5° to 39° C. (99°–102° F.) not necessarily due to secondary pyoderma, were often observed at some time during the course of the disease.

*Investigations.*—Routine laboratory examinations revealed nothing significant. The urine was normal. Blood counts made on several occasions often showed a slight or moderate secondary anaemia. Some patients had a slight leucocytosis, apparently in connection with the febrile phase. There was only a slight and transient eosinophilia in blood and in the contents of the blisters. Cultures of blister fluid were sterile or yielded *Staphylococcus aureus*. Patch tests with 20 or 30% potassium iodide were positive in two cases and negative in the remaining 8, even when the test was performed on previously affected areas. Routine patch tests for eczema gave negative reactions except with 1:1000 mercuric iodide in two instances. Nikolsky's sign was not present.

*Course.*—As stated above, the onset was commonly acute, necessitating admission to hospital, and the patients often appeared acutely ill. The course was usually subacute. Exacerbations were followed by remissions, sometimes regardless of treatment. The longest hospitalization period was 246, and the shortest 20 days, the average being a little over two months. Two patients were discharged with but little improvement and three had to be readmitted. Most patients were followed up from one to ten years. Five presented relapses, which usually were mild and less lasting.

Sobye (1946, 1948), who was specially interested in the fate of dermatitis herpetiformis in children found recurrences in only 50%. During the recurrences the disease often changed its original features. Of 42 cases of the disease

(35 adults and 7 children) which were followed up by Peterkin (1951) only 12 adults and 4 children were cured. In childhood the disease has a better prognosis.

*Diagnosis.*—Differential diagnosis from pemphigus is easy. Although the chief lesions which often dominate the picture are vesicles and bullae, nevertheless the sudden onset, the acute and subacute course and the lack of oral manifestations rule out pemphigus, which is exceedingly rare in childhood. More difficult is the differentiation from erythema multiforme, in particular from the unusual disseminated bullous type. In the two cases where erythema multiforme was first considered the further course of the disease indicated the diagnosis of Duhring's disease.

In three children bullous contact dermatitis was considered. Patch tests with the substances in question and routine tests for eczema were negative. There was no personal or family history of allergy or atopy.

Pemphigus tropicus, which I call pemphigus sudaminosus, essentially a children's disease, is encountered in the late summer months. It develops on skin moist with perspiration. The blister has thin cigarette paper-like walls which burst easily, changing into dried scales or impetiginous lesions. In urticaria phlebomica and strophulus infantum the papules are firm, and the vesiculo-bullae, if they occur, are fairly thick-walled and rupture with difficulty. They bear an urticarial character which was lacking in our cases.

*Treatment.*—No specific or semi-specific therapy is known for dermatitis herpetiformis. Various types of treatment were used. In the 13-year-old boy suramin was given with apparently good results. But suramin, being toxic, was not given to the younger children. Sulphonamides were widely used. They often controlled the secondary non-specific pyodermal infection which developed in some lesions. In two cases sulphapyridine rapidly cured the attacks. Penicillin was administered in three, and aureomycin in one of our cases, with no demonstrable effect. Arsenic in the form of Fowler's solution, given in increasing doses, seemed to be of value when it was used for a considerable time.

#### SUMMARY.

The special features of dermatitis herpetiformis in children are compared with those of adults.

The onset is often sudden, following an acute infectious disease such as tonsillitis.

Polymorphism is lacking. The main lesions are papules and vesicles grouped in herpetic form and sometimes closely aggregated, forming semicircles or circular and oval rings.

The eruption is widely disseminated, with a tendency to symmetry.

Pruritus is infrequent and moderate in degree.

Residual pigmentation is rarely encountered. The macules remaining after healing have a pinkish rather than a brownish tint.

Eosinophilia in blood and in bulla fluid are not constant and are moderate in degree.

Hypersensitivity to halogens is not a diagnostic criterion. Of ten cases only two showed a positive potassium iodide test.

The course is often subacute, commonly associated with constitutional symptoms such as general malaise, fever, anorexia, and loss of weight.

The prognosis is good, as the recurrences are milder and less frequent.

Arsenic given over a long period is of value. In two cases sulphapyridine had a striking success, and was evidently superior to other sulphonamides in controlling not only the secondary infection but also the attacks themselves.

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# ROYAL SOCIETY OF MEDICINE.

## SECTION OF DERMATOLOGY.

President—Dr. G. B. DOWLING.

20 December 1951.

### **Scleroderma with Calcinosis.**—Dr. H. A. TREBLE.

I saw this housewife, aged 39, eleven years ago with an area on the outer side of the right thigh 15 cm. in diameter, which was erythematous, depressed and deeply attached to muscles. Very shortly afterwards she developed typical dermatomyositis of the face. During the next two years scleroderma gradually appeared in the fingers and toes with increasing stiffness of the limbs, and also a wide area of scleroderma with telangiectasia on the shoulders, upper chest and back. Around the shoulders and along the flexor tendons of the forearm and palms, hard, calcified, nodular lesions developed, some of which have ulcerated and discharged calcareous spicules. She has also developed around the hips some nodular sclerodermatous lesions which later calcified. On the whole the lesions of the face have improved in recent years.

She has complained of dysphagia. X-rays reveal no abnormality of the pharynx or oesophagus, and the condition appears to be due to stiffness of the neck tissues as a whole. A barium meal revealed no intestinal lesions. The heart is of normal size and shape on skiagraphy.

Haemoglobin 98%. C.I. 1.0; white cells 5800; differential normal. Serum calcium 10.9 mg.%; blood phosphorus 3.1 mg.%; serum acid phosphatase 2 units (Gutman) per 100 ml.; serum alkaline phosphatase 5.8 units (K.A.) per 100 ml. Wassermann and Kahn tests negative.

In the early stage she was treated for some weeks with 40 g. glycine daily with no apparent benefit. Treatment with calciferol 25,000 units daily eighteen months ago had to be abandoned owing to nausea and vomiting.

The PRESIDENT: Is there any great degree of skeletal and muscle weakness?

Dr. TREBLE: She said she had great difficulty in walking because of stiffness rather than weakness.

The PRESIDENT: She seems to have lost a great deal of muscle, and there is much wasting. The case seems to be a perfect example of the half-way house between dermatomyositis and progressive symmetrical scleroderma.

### **Liquefying Nodular Panniculitis.**—Dr. B. SCHWARTZ.

Mrs. K. C—, aged 41, developed an ulcer behind the right knee in August 1950, which she attributed to an infected mosquito bite. The ulcer was described as unusual and did not heal until April 1951. There was no constitutional disturbance.

In May 1951 she was admitted with acute abdominal pain in the right hypochondrium and right iliac fossa. ?Cholecystitis. Temp. 102.2° F. E.S.R. 41 mm. in one hour (Wintrobe). Other investigations normal.

The pyrexia continued and after one week she developed a small right pleural effusion from which 130 c.c. of a yellow serous fluid was aspirated. Culture was sterile; no tubercle bacilli seen. In three weeks the pyrexia subsided under treatment with streptomycin, and the pleural effusion cleared.

From October 1951 diarrhoea occurred on and off for two months and right-sided abdominal pain for three weeks. A tender mass was felt to the right of the umbilicus, and she was readmitted. ?Crohn's disease.

Six tender red fluctuant swellings about 3 cm. in diameter were then seen on the legs. These had appeared within four to five days and were breaking down. She reported that for three weeks her temperature had risen from 99° F. in the morning to 103° F. at night.

An intermittent fever continued and new tender areas developed on the limbs, beginning as firm masses 1-4 cm. in diameter, which softened, broke down and discharged a yellowish-brown serous fluid and left an undermined crateriform ulcer (Fig. 1). The course from appearance to breakdown was ten to fourteen days.

Treatment with chloramphenicol 0.5 g. six-hourly began on 22.xi.51. This caused a rapid decline of the fever, and although new tender areas appeared there was a distinct slowing in their evolution. The ulcers began to heal, the mass in the right iliac fossa disappeared, but a new mass was palpable in the left hypochondrium.

*Present condition.*—Is still an in-patient at St. George's Hospital under Dr. C. B. Levick. She is afebrile, and has lost about 1 stone (6.4 kg.) in weight since October 1951.

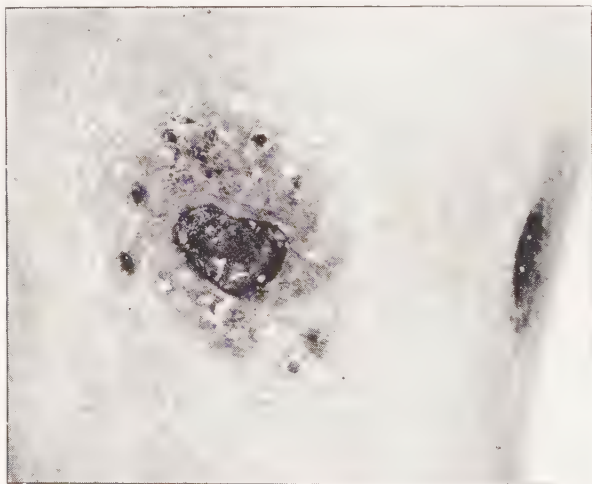


FIG. 1. —Liquefying nodular panniculitis, showing ulcerated lesions on thigh.

There is one unruptured but fluctuant mass over the left deltoid. Unhealed undermined ulcerations still discharging yellowish fluid are present on the anterior aspects of the thighs, and depressed atrophic pigmented scars at the sites of previous ulcerations. There is no abdominal tenderness. The spleen is not palpable. There is no abnormal glandular enlargement.

She gives no history of having taken iodide or bromide medicines. There is nothing significant in her past medical or family history.

*Investigations.* Repeated and careful examination of fluid from the abscesses showed no tubercle bacilli or other organisms and culture was sterile.

Blood-count normal. E.S.R. (Wintrobe) 25 mm. in one hour. Blood urea 16 mg. % . W.R. and Kahn negative. Serum proteins: Total 7 grammes % . Albumin 1.7. Globulin 5.3. A.G. ratio 0.3:1. Serum amylase normal. Urine showed no abnormality: Culture negative. Diastase index — 6. Stools normal; no pathogens on culture. Faecal fat: Total 36.9 g.; 67% split, 33% unsplit.

*Skiagrams.*—*Chest:* Small area of pleural thickening on right side. *Opaque meal:* No radiographic evidence of organic lesion in oesophagus, stomach or duodenum.

No obstructive lesion in large intestine. *Opaque enema*: No intrinsic abnormality detected in colon.

*Biopsy*.—An unruptured lesion from right thigh was removed.

*Pathological report* (Dr. N. F. C. Gowing): A portion of subcutaneous adipose tissue. Microscopically shows a cavity in the adipose tissue which is filled with debris and some inflammatory cells. Inflammatory cell infiltration can also be seen in the connective septae of the surrounding fat. Focal collections of foam cells and multinuclear giant cells are also present. No bacteria can be found.

*Comment*.—This patient has, over the past eighteen months, presented the clinical picture of recurrent febrile attacks, a pleural effusion, abdominal pain with the formation of tender masses in the abdomen, and the appearance of tender areas on the limbs. Over a course of ten to fourteen days these areas softened, broke down and discharged a yellowish-brown fluid and left an undermined ulcer. Some of the areas later healed, leaving depressed pigmented scars.

Histologically the lesions show a fat necrosis, and this, with the blood and bacteriological investigations, excluded the possibility of erythema nodosum, erythema induratum, sarcoidosis and syphilitic or tuberculous ulcers. No fungi were seen on examination, and there was nothing to support a diagnosis of periarteritis nodosa or nodular vasculitis. In lipomatosis the fatty tumours do not break down, nor is there any systemic reaction.

Three other possibilities were considered:

*First*, that the skin lesions were secondary to an abdominal neoplasm. An attractive theory was the presence of a pancreatic tumour with lipolytic secondaries, but there appears to be no pancreatic disturbance and the healing of some lesions makes this unlikely.

*Secondly*, the possibility of artefact. Although artefact lesions would not explain the constitutional disturbance or, for example, the serum-protein changes, steps were taken to exclude the possibilities of the patient producing the lesions herself.

*Lastly*, Weber-Christian disease. The classical picture of relapsing febrile non-suppurative panniculitis is now well known. Histologically this shows a fat necrosis, the presence of some cellular infiltration, macrophages, foam cells and foreign body giant cells, which is the histology in this case.

Although excluded by the definition, liquefaction of Weber-Christian nodules has been reported twice before. In 1938 Shaffer used the term "Liquefying Nodular Panniculitis" to describe the case of a woman aged 33, who had had recurrent abscesses for ten years. These began as woody, tender masses the size of a walnut or an egg, which ruptured and discharged an oily, yellowish-brown fluid. This occurred over a febrile course of ten to fourteen days. It was this report which probably prompted Ormsby and Montgomery to include the possibility of liquefaction in their textbook description of the disease (1948). Binkley, in 1939, also reported liquefaction of a Weber-Christian lesion. More recently Bunnell and Levy (1948) described lesions which were occasionally fluctuant.

It is always satisfying if a single diagnosis can be made to cover the multitude of a patient's symptoms, and it is suggested that Weber-Christian disease or its variant, liquefying nodular panniculitis, will do so in this case. The skin lesions have, I think, been accounted for. In a fatal case reported in 1944 Spain and Foley described necrotic nodules in the mesenteric and omental fat. The presence of such nodules here would explain the abdominal pain and the masses felt at different times in different areas of the abdomen.

Miller and Kritzler (1943) have described fat emboli in the lungs, and Hartwell and Thannhauser (1940) also report a pleural effusion in Weber-Christian disease. There may be a similar occurrence here.

A variety of different treatments have been used in Weber-Christian disease. It is always difficult to assess the value of treatment in relapsing diseases, but many



drugs are reported to produce remissions. It was to be expected that cortisone would be used, and in a recent case in America this reduced the fever but the case subsequently ended fatally (Shuman, 1951).

Chloramphenicol was used empirically in the present case and we have been most impressed with its effect. There has been no recurrence of the fever since its use was discontinued a few days ago.

(I am indebted to Drs. C. B. Levick and M. I. A. Hunter for their permission to show this case.)

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Dr. F. PARKES WEBER: I think the suggested diagnosis is quite possible. I have not seen any cases in which the nodules have broken down.

### Miliary Lymphosarcoma of Scalp and Face.—Dr. H. A. TREBLE.

This patient, aged 56, has noticed on the forehead and upper cheeks in the past two years a rash of closely packed pinkish lesions, about  $\frac{1}{2}$  mm. in diameter, sometimes slightly raised above the skin surface. As they were symptomless she paid little attention to them. In the last six months she has had a steady fall of hair from the scalp and this caused her to seek advice.

Almost every hair follicle of the scalp is surrounded by a slightly raised pink lesion about  $\frac{1}{2}$  mm. in diameter, and the forehead and cheeks are covered with similar lesions, closely set. Most of those on the face appear to surround lanugo follicles.

The hair of the scalp is being extensively shed. Other areas of the skin are unaffected. Her general health is good and no abnormality was found on general physical examination. The blood picture is normal, and Wassermann reaction negative.

Sections of her scalp reveal closely packed adult lymphocytes surrounding each hair follicle—miliary lymphocytoma.

Divided doses of 1200 r over two weeks to selected areas on the scalp and temple have made no difference to the lesions.

Dr. J. SOMMERVILLE: Some months ago we had a case almost comparable, with a band of the little lesions across the forehead. I agree that it is an example of miliary lymphocytoma: it is exactly the same colour with the same minute size of lesion and aggregation.

Dr. F. RAY BETTLEY: I have a similar patient diagnosed as miliary lymphocytoma which I showed here over four years ago. I thought to-day's patient was of the same sort, but I was a little disturbed on looking closer to see the colour of these lesions: in my patient they were semi-translucent like sago-grains and had an almost bluish colour, but these are red, though again with the semi-translucent appearance. My patient has been under observation for five years and has completely failed to respond to radiotherapy. I agree with the diagnosis in this case.

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### Keratoderma Disseminatum Palmaris et Plantaris. Dr. ARTHUR PORTER.

The patient, aged 69, was referred on account of numerous "warts" on his hands and feet.

*Past history.*—Prostatectomy a few years ago. No serious illness. No history of arsenic or other drug. Retired (gardener).

*Family history.*—Mother's father had same skin trouble. Of five children the

eldest, a woman of 42, has been affected for two years, while in the youngest, a man of 20, signs have recently developed.

Patient has always had thick skin on his palms and soles, and used to sweat there a good deal when young.

*Examination.*—A healthy man with a peculiar form of keratosis of the palms, backs of some fingers and also on the soles. No other abnormality or disorder noted.

The skin on the palms and soles is thick and hard, and dotted over with darker projections resembling warts.

The wart-like objects are thick plugs of horny material penetrating deeply, which leave cavities when removed.

On the soles the thickening is greatest on points of pressure such as the heel and ball of the foot.

*Investigations.*—The W.R. and Kahn reactions were negative. Two estimations of the plasma vitamin A gave an average of 130 i.u./100 ml.

Section showed much hyperkeratosis with slight acanthosis, and the presence of thick plugs of keratotic material penetrating deeply. The dermis was normal.

*Treatment.*—100,000 i.u. vitamin A was given daily. There was no local treatment. One month later the skin had improved considerably. After four months the skin was much smoother, the keratotic masses were smaller and most of the plugs had fallen out.

Vitamin A was stopped, and within two months the lesions had increased in size and central plugs were re-forming. Vitamin A was started again, and within three weeks of beginning treatment improvement was observed by the patient.

No vitamin A has been given for the last three months and the condition has relapsed.

*P.S.*—Inquiry shows that the patient last handled arsenical sprays 34 years ago, and was then protected by rubber gloves and boots.

### Acute Disseminate Lupus Erythematosus Treated with ACTH. Dr. C. H. WHITTLE.

P. H.—, a single woman aged 27. Seen first 14.v.51.

*History.*—Three years' chronic discoid lupus erythematosus on palms, back of elbows, inner surface of knees—scaly red lesions going on to atrophy. Six months ago finger-tips became tender. Three weeks ago sudden onset of fever, thought to be influenza, with loss of voice and cough. Feet and hands became swollen; fever continued. Six days ago sudden extension of skin lesions with fresh spots on ears and cheeks.

*Condition on admission* (16.v.51).—Nervous girl, thin, slight stammer. Hair showed early greying and thinning. Prominent eyes; flushed. Tongue furred and dry; foetor oris; several carious dental stumps. Red scaly lesions on ears, and in batwing distribution on cheeks; similar patches on toes, lateral surface of feet, dorsa of feet and inner aspects of both knees. Similar patches on elbows, wrists and fingers—thickened irregular scaly. *Definite white scarred* areas on ulnar borders of hands and on inner sides of knees in association with the red patches.

*Spleen* enlarged  $1\frac{1}{2}$  finger-breadths below costal margin.

She was put on a series of dummy ACTH intramuscular injections for 3 weeks, and then given ACTH without her being told of the change.

*Dosage.*—25 mg. ACTH I.M. 4 times daily for 5 weeks.

*Course* shown on the chart.

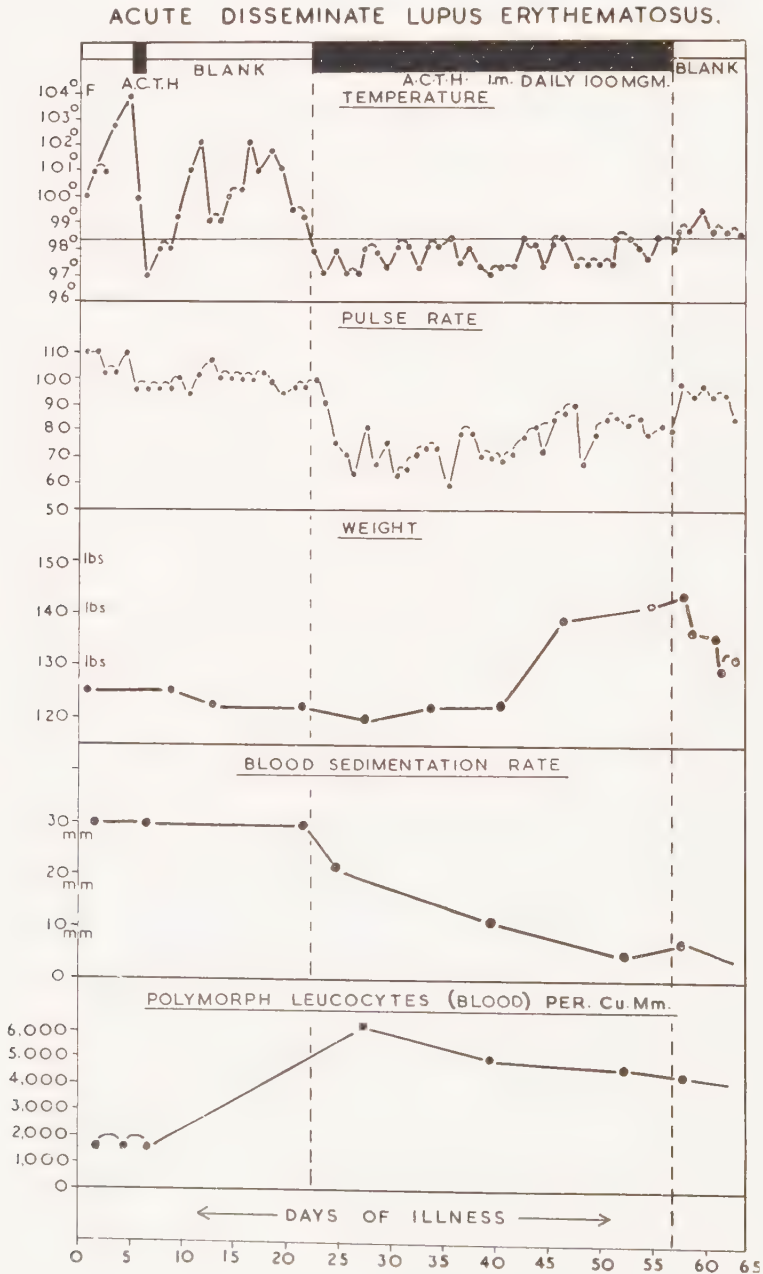
The temperature fell to normal and remained normal or subnormal throughout treatment; the pulse-rate dropped from around 100 to 80 a minute. The weight rose from fluid retention, but fell rapidly (14 lb. in 3 days) with accompanying diuresis when ACTH was stopped.

E.S.R. fell steadily from 30 mm. to below 10 mm.

Polymorph leucocytes rose from 1500 per mm.<sup>3</sup> to 6000 and remained at this level during treatment.

*Note.*—Sudden drop in temperature when ACTH was given by mistake on the 6th day for 24 hours.

The lesions faded rapidly, starting after 3 days' treatment; the pigmentation which





followed was severe but has since disappeared. She was emotionally unstable during treatment, with fits of temper and weeping, and acne appeared on the face. Oedema of feet and labia, and the characteristic "moonface" appeared. There is now nothing visible left, not even the "atrophy" on the wrists.

Keto-steroids and sodium-potassium levels were not serially estimated. Eosinophilia was absent. No L.E. cells could be found in the blood nor any "Tart" cells in the bone-marrow.

*Conclusions.*—This patient is one of the few who have responded favourably to ACTH treatment, and has shown few untoward symptoms. Despite cessation of treatment 5 months ago she is still in a remission, and is well and happy. The return of the polymorph leucocyte count to its pre-treatment level, 1500 per mm.<sup>3</sup>, is a warning that she may not be out of the wood.

Dr. J. SOMMERVILLE: About a year ago we treated a comparable case with cortisone with the same almost dramatic result. The patient was dying, and Sir John McNee, to whose wards she had been transferred, decided to give her a chance and within three weeks she was well. Her skin lesions disappeared almost completely and to this day she has remained well. The only difference was that she developed a very definite increase in the hair growth; it was quite noticeable in the photographs.

The PRESIDENT: Did Dr. Whittle's case develop any of the visceral manifestations of disseminated lupus erythematosus?

Dr. WHITTLE: She had an enlarged spleen, which was palpable  $1\frac{1}{2}$  finger-breadths below the costal margin. The sodium potassium levels were normal, the 17-keto-steroids were normal, and the only visceral manifestations were the enlarged spleen, fever and the general disturbances of health associated with it. I think this was a case of moderate severity. But in the past these disseminate cases invariably died, and it seemed only fair to give her the chance of recovery.

Dr. S. GOLD: Apparently this girl has had two courses of sulphonamides in the preceding two years and her acute illness started with chicken-pox, measles and some other fever for which she had yet another course of sulphonamides.

Dr. W. G. TILLMAN: I had two serious cases of disseminated lupus erythematosus of comparable severity. One occurred before cortisone or ACTH was available. This patient recovered. The other had the benefit of cortisone and died. I therefore feel that factors other than the apparent severity at the onset are of importance, and that the course is not necessarily influenced by use of the more modern drugs.

Dr. WIGLEY: I thought it was of interest that the temperature dropped a day and a half before the ACTH was given.

Dr. WHITTLE: The chart shows that the pulse-rate did not move until the ACTH was given, and the temperature, though lower, had not stabilized at normal till after the treatment had been started. She did not know when the ACTH was started.

Dr. A. LYELL: There was a very severe case in Hospital under Dr. L. C. Martin who had pericarditis and pleurisy just before the advent of ACTH. She recovered spontaneously, and over the course of six months she became perfectly well, her hair grew, she put on weight. Eventually she came into hospital with kidneys involved and was given cortisone. This had no effect whatever on the course of the illness; she gradually went downhill and died.

The PRESIDENT: We have had several severe cases at Hospital, and we are driven to the conclusion that if there is renal involvement cortisone does not improve matters very much. I imagine everybody has had experience of remissions in lupus erythematosus but the prognosis is bad on the long-term histories which are available to us. I am under the impression that the ACTH has produced the remission in this patient.

**Diagnosis: Multiple Self-healing Epitheliomata (Ferguson Smith).** Dr. P. D. SAMMAN.

Mr. W. W—.

In 1945 this man developed a lump on his left cheek which at first grew rapidly to about 1 in. in diameter and then remained stationary. Later it dried up and fell off, leaving a scar. The whole cycle took about six months.

Since that time he has had many similar nodules on his face, some larger than the first, but many smaller. The largest has left the deepest ulcer and lasted almost a year.

The patient knows of no other members of the family similarly affected. He is in the regular army and has seventeen years' service, including a tour of duty in Egypt in 1935-37. He was born in the north of England.

*Present condition* (12.xii.51).—There is a circular nodule on the right side of the nose, 2 cm. in diameter. It has an irregular surface and smooth edge, and was first noticed as a minute spot eight weeks ago. In addition he has two further lesions which are just starting to grow. One on his left temple is 1 mm. in diameter, annular with slightly raised shiny margin and depressed centre; the other, on the left side of the nose, is smaller and appears to be a milium body. The patient says all the tumours have started like this. For two weeks they remain small, then grow very rapidly for about two months before becoming stationary.

Scattered over the face are many flat or punched-out white scars—the sites of former lesions.

*Histology*.—A biopsy was made at the edge of the large lesion. The appearance is more in keeping with molluscum sebaceum than a true squamous cell epithelioma.

*Comment*.—The interest of these cases lies in distinguishing them from molluscum sebaceum. Although the histology is similar, clinically they appear different, especially in relation to the multiplicity of lesions, the familial history of some of the recorded cases and the flatness of the fully developed lesion as seen in this patient.

(I am greatly indebted to Colonel J. A. MacDougall, of the Royal Army Medical College, for permission to show this patient.)

Dr. J. SOMMERVILLE: There is no doubt that it is comparable with Dr. Ferguson Smith's case but there have been certain variations in the appearances. My own case was more like the button type of epithelioma, but the lesions tended to become more warty. The lesions lasted for four months, whereas in this case they have lasted for five or six. The scars are comparable except that in this case they are smoother; the majority of scars tend to be not quite so smooth, possibly as deep with a little over-turning on the edge.

As far as I can recall in Dr. Smith's cases and the group described by Dr. Charteris (1951) and in my own, there has been a very definite familial history. It may be that in this case this history has not been picked up in cousins or others.

There is one other point which must be remembered: that in Charteris's cases the lesions were not only on light-exposed parts, and a patient in whom the self-healing lesions were occurring ultimately died from a lesion which did not heal itself.

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 SOMMERVILLE, J. (1950) *Ibid.*, **62**, 485-490.  
 CHARTERIS, A. A. (1951) *Amer. J. Roentgenol.*, **65**, 459.

Dr. H. R. VICKERS: I have always had difficulty in differentiating between acanthoma and this so-called self-healing epithelioma. I feel that they may be the same condition, but that the clinical features of multiplicity and particularly familial incidence in the self-healing group may be due to some inherited pattern reaction in the skin rendering it more likely to develop in this peculiar way.

The PRESIDENT: I think the clinical difference between molluscum sebaceum and this case that we have seen this afternoon is sufficient to justify keeping them apart for the time being.

The following cases also were shown:

**Lymphocytoma Cutis**.—Squadron-Leader L. H. TRUELOVE (for Dr. ALICE CARLETON).

(1) **Mycosis Fungoides**. (2) **Scurvy**.—Dr. D. L. REES (introduced by Dr. G. B. DOWLING).

**Extensive Hairy Naevus of Face, Treated by Belly-arm Flap Replacement with Post-auricular Grafts to the Eyelids**.—Mr. PATRICK CLARKSON.

**Lichen Sclerosus et Atrophicus**.—Dr. A. LYELL.

**Melanosis**.—Dr. D. I. WILLIAMS.

**Kaposi's Multiple Idiopathic Sarcoma**.—Dr. H. C. SEMON.



## THE NORTH BRITISH DERMATOLOGICAL SOCIETY.

Glasgow, 11 October 1951.

**Necrobiosis Lipoidica.**—Dr. J. SOMMERVILLE.

Mr. J. B.—, aged 41.

*History.*—The eruption appeared on the legs eight years ago.*On examination.*—On the lower half of both lower legs are extensive areas, orange-brown in colour, shiny and sclerosed. On the medial aspect of the lower end of the lesion on the right leg is a small round, superficial ulcer. The lesions are traversed by a network of telangiectases.*Investigations* (12.ix.51).—Hb 100%; R.B.C. 4,720,000; W.B.C. 5600; polys. 63%; lymphos. 31, monos. 3, eos. 3%; E.S.R. (Westergren) 1 mm. in the first hour; W.R. negative; blood-sugar 80 mg. %.*Histology.*—(Lesion on left leg.) There are areas of collagen necrosis. The elastic tissue fibres are destroyed and there is some surrounding foreign-body giant cell reaction. The appearance seen is that of necrobiosis lipoidica diabetorum.**Multiple Gangrene of Skin.**—Dr. C. M. ROSS (for Dr. M. S. SMITH).

Mr. H. McL.—, aged 53, a tube worker (metal).

*History.*—The patient was first seen 15 months ago. He then had an eruption of 4 months' duration, which resembled a papulo-necrotic tuberculide but was vesicular on the ears.One month afterwards he developed an ulcer on the left calf which spread with great rapidity. The clinical appearance, particularly three concentric zones of discoloration, suggested gangrene. The "ide" eruption became purpuric, but constitutional upset was absent. The ulcer healed following *débridement* of the edge, local streptomycin dressings and anti-gas-gangrene serum. On discharge four weeks later a few papulo-necrotic lesions were present on the elbows.Four days later a fresh purpuric iris-like eruption developed on the limbs and a few of the bullous lesions broke down to form ulcers, again showing three zones. In one ulcer a gas bubble was seen and crepitus obtained. The previous treatment was reinstituted, but the ulceration continued in an area where *débridement* had been incomplete. It was then suggested that the process be allowed to limit itself naturally, and though at first extension was relentless there were finally signs of arrest. Almost simultaneously, however, inflammation developed in the adjacent deeper tissues of the popliteal region. The ulcerated areas of both legs were thereupon radically excised by diathermy.Since then (7 months ago) there has been slow straightforward healing with cod liver oil dressings and no other treatment. An occasional "ide" eruption has appeared, with small ulcers, but only one of these has required *débridement*. Such a bout occurred one month ago, when the patient was almost well, and was accompanied by one typical ulcer and others, on scarred sites, resembling small trophic ulcers.*Past history.*—Arsenical treatment for lues twenty years ago. Heavy drinker.*Histology.*—(Elbow.) Non-specific necrotizing ulceration microscopically like pyoderma gangraenosum.

Deep tissue from the ulcer bed shows a non-specific inflammatory reaction with evidence of arteritis but not of periarteritis nodosa.

*Bacteriology.* Before antibiotics were begun, scanty Gram-positive cocci resembling streptococci were recovered from the bullous edge of the original ulcer. Subsequent aerobic and anaerobic cultures have been negative except for an occasional *Staphylococcus aureus*, probably a secondary invader.



A Gram-positive diplococcus isolated on one occasion could not be identified.

No bacteria have been seen in appropriately stained sections of biopsy material.

*Investigations.*—W.R. and blood culture negative. Cold agglutinins absent. Liver function tests and blood counts normal. Glucose tolerance test: renal glycosuria with exaggerated hypoglycaemic rebound. Blood chemistry otherwise normal. Skiagrams of chest, bones of hand and teeth normal. Sinuses: considerable reduction of air space and some thickening of the mucosal lining. Proof puncture: no antral disease. Culture of faeces: no pathogens.

*Comment.*—Simple *débridement* of the ulcer edge and cod liver oil dressings have been more effective than anti-gas-gangrene serum, antibiotics, ACTH, local oxidants and antiseptics. When the ulcers were at their height the "ide" eruption and small fresh ulcers continued to appear. When *débridement* was carried out the intense surrounding oedematous flare subsided overnight, and there was rapid disappearance of the "ide" eruption and involution of the many small ulcers. It is thought that they may have been a reaction to tissue breakdown in the area of intense reaction around the larger ulcers.

Pyoderma gangraenosum, which these ulcers resemble, has been defined as a symptom complex of underlying constitutional debility with a variety of infectious agents as the precipitating cause, directly or indirectly (Weiner, 1940). Others have seen in pyoderma gangraenosum features suggestive of allergy. The "ide" type of eruption and the necrotic self-destroying nature of this patient's lesions are in keeping with the latter suggestion.

It seems worthy of note that in such a relatively uncommon condition three at least of the reported cases, including our own, have been in men engaged in trades or occupations connected with the manufacture of metals (Carle, 1902; Weiner, 1940).

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WEINER, A. L. (1940) *Arch. Derm. Syph., Chicago*, 41, 711.

**A.T. 10 and Eucortone in Psoriasis Arthropathica.**—Dr. C. M. ROSS (for Dr. M. S. SMITH).

Miss J. A—, aged 28, a typist.

This patient has had psoriasis for 15 years and arthritis for over 5 years. She has been a patient at the Victoria Infirmary for 3 years. During these 3 years there has been one remission only, following gold therapy. Subsequent gold therapy has not been effective.

*Treatment.*—Administration of A.T. 10 (dihydrotachysterol) 10 minims three times daily and eucortone (suprarenal cortex B.P.C.) 1 c.c. intramuscularly twice weekly was begun five months ago (14.v.51) during a severe relapse, when the joints were tender and painful and there were large plaques of psoriasis on the trunk, limbs, scalp and flexures. Three weeks later (8.vi.51) she had signs and symptoms of intolerance—thirst and lassitude and a raised serum calcium (serum calcium 12.7 mg. %, blood urea 19 mg. %). She then showed the first real signs of improvement, more marked in the skin than in the joints.

The A.T. 10 was stopped after five weeks' treatment (18.vi.51) and improvement continued rapidly. Three days later there was only staining and scanty guttate lesions and the joints were less painful.

Eucortone was stopped after 9 weeks' treatment (20.vii.51) when the joints were again less stiff and painful.

With two months' holiday and no further treatment the patient has gained a stone in weight and is able to bathe for the first time in years. She now has only scanty guttate lesions and slight pain and stiffness in one ankle.

Before and at the conclusion of treatment the glucose tolerance curve was remark-

ably low and flat. Three months after treatment the curve had risen and was then of the "lag" type rising to 218 mg. %.

*Comment.*—This method of treatment was advocated by Fleck (1950).

A series of cases, necessarily small owing to the difficulty in obtaining A.T. 10, is now being treated, and results to date are encouraging. Progress is usually not striking until mild toxic symptoms appear. In cases treated with eucortone alone, or with eucortone and sterogyl the results have been poor in comparison, perhaps because the dose of sterogyl—15 mg. a week—has not been sufficiently high.

## REFERENCE.

FLECK, F. (1950) *Derm. Wschr.*, **122**, 1239.

**Lichen Sclerosus et Atrophicus.** Dr. O. A. FINN (for Dr. A. D. McLACHLAN).

Mrs. A. R —, aged 53.

*History.*—In May 1948 the patient noticed, on the nape of the neck, a white pruritic patch which gradually extended and involved the occipital region and upper part of the back. There was no hair loss.

In March 1950 the patient was demonstrated to the North British Dermatological Society and showed, on the nape of neck and scapular regions, a number of ivory-white atrophic, slightly infiltrated plaques. There was no surrounding areola and no pigmentation, but there were several black comedo-like plugs present on the plaques.

*Progress and treatment.*—In May 1950 the patient received x-ray therapy (total of 200 r), which resulted in decrease in the pruritus but no other clinical improvement. Since 8.vi.51 she has been treated with vitamin E (ephynal) 100 mg. three times daily. The lesions now appear to be much more supple, and there is a kidney-shaped area in the interscapular region which shows a definite improvement.

**Reticulosis in Infancy.**—Dr. W. A. DEWAR (for Dr. A. GIRDWOOD FERGUSON).

C. T—, a female, aged 13 months.

*History.*—The child is the youngest of a family of seven. The parents, three brothers and three sisters are well.

The ante-natal period was uneventful and the birth was a normal, full-time, spontaneous delivery. The child was cyanosed at birth and required oxygen for two hours. Birth weight was 8½ lb. The child was fed on national dried milk and later mixed feeding. She cut her first tooth at three and a half months.

An eruption appeared on the trunk when the child was three months old and has persisted in spite of various treatments. Two months later bilateral swellings were noticed in the neck and shortly afterwards in the groins. About this time a purulent discharge appeared from both ears.

*On examination* (13.iv.51).—A follicular papulo-squamous eruption of seborrhoeic type is present on the trunk. Pityriasis capitis is marked. Numerous enlarged glands are present in the anterior and posterior triangles on both sides of the neck and in both groins. The glands are soft and discrete but are not fluctuant. Liver is enlarged one finger-breadth below the costal margin but no enlargement of the spleen is detected.

*Investigations.*—Blood counts show Hb 52–77%, W.B.C. 8400 to 17,000. Normal differential.

*Skiagrams.*—Skeleton: There are several circumscribed areas of rarefaction in the lower part of the skull and also in the right iliac bone and in the upper part of the right femur. Chest normal.

*Histology.*—(Dr. W. M. B. Davidson.) Sections from the skin of the right side of the chest and of the abdomen show infiltration of the dermis by endothelioid cells with some pleomorphism of shape and size. A few eosinophils are present, but no giant cells.

A section from a lymphatic gland taken from the right inguinal region shows that the normal architecture has almost disappeared, owing to the presence of large numbers of endothelioid cells with some eosinophils and a few multinucleated giant cells.

A section from a lymphatic gland taken from the left inguinal region at a later date shows some small areas of necrosis with numerous eosinophils surrounding them, and accumulations of eosinophils are present throughout the gland. Multinucleated giant cells are also present.

Frozen and gelatin sections of skin stained for fat show a few cells containing numerous small sudanophilic droplets. Sections of lymphatic gland show more numerous areas where there are a fair number of cells containing numerous small droplets of sudanophilic fat. Osmic acid sections, however, are negative, and the polarizing microscope shows no doubly refractile crystals of cholesterol.

*Blood chemistry.*—Blood sugar 100 mg. %; blood cholesterol 228 mg. %; serum urea 38 mg. %; serum total protein 5.5 g. %; serum albumin 3.6 g. %; serum globulin 1.9 g. %; serum calcium 10.2 mg. %; serum phosphorus 3.7 mg. %; serum alkaline phosphatase 12.2 mg. %; thymol turbidity 1 unit; serum sodium 138 m.Eq. l; serum potassium 5.0 m.Eq. l. Wassermann reaction negative.

*Treatment and progress.* 25.iv.51 2.v.51: Streptomycin i.m. 200 mg. twice daily.

4.v.51–10.v.51: Streptomycin orally 50 mg. 4-hourly.

10.v.51–19.v.51: Cortisone 5 mg. 6-hourly.

21.v.51–26.vi.51: Chloramphenicol 250 mg. 4-hourly. X-ray therapy to glands and to whole body was also given. Some improvement has been noted following x-ray therapy. The inguinal glands have diminished in size and the skin eruption is now less marked.

*Comment.*—This case shows signs transitional between Letterer-Siwe's disease and Hand-Schüller-Christian disease, and may perhaps be taken as an illustration that the two conditions, together with eosinophilic granuloma of bone, are all different manifestations of the same underlying disease process.

*Later progress.*—The child died on 18 January 1952.

*Post-mortem report.*—(Dr. W. M. B. Davidson.) The body is that of a pale, young female child, slightly below average size, with a peculiar red and slightly excoriated rash on the front and back of the body, neck and scalp with only a little upon the face. A small ulcerated area is present in the right inguinal region.

*Lungs:* The lungs are of normal size and free of adhesions. On section they are of normal colour and show a little oedema only. In a few places there is a slight, patchy pallor of the lung tissue suggesting endothelioid infiltration. The bronchi and trachea are normal.

*Heart:* the precordial sac is normal. The heart (50 g.) is of normal shape and size, but there are some small, firm pale nodules on the wall of the right auricular appendage, possibly due to endothelioid infiltration. On section of the heart there is no abnormality of the chambers or valves and the myocardium is firm and of good quality. The aorta shows no disease.

*Abdomen:* The oesophagus is normal. The stomach is distended by food but no abnormality is present and the remainder of the intestinal tract appears normal.

*Liver:* The liver is about normal in size (350 g.) and of firm consistency. On section it shows no apparent abnormality and the normal architecture is preserved.

The gall-bladder contains some thick bile and the ducts are normal. The pancreas is firm and has a normal appearance. The spleen is firm and slightly enlarged (40 g.) and on section has a firm, dark red pulp, with areas where it is pale red in colour. Two small foci slightly yellow in colour are present in the pulp, probably due to necrosis. The Malpighian bodies are not distinct.

The kidneys are of average size (45 g. each) and firm. On section there is marked



pallor, particularly at the cortex, and the striations are very indistinct in places. The capsules strip easily, leaving a smooth surface. The ureters are normal.

The thyroid is normal. The thymus shows no apparent change other than a moderate amount of involution. The suprarenals are normal.

Lymphatic glands: The cervical lymphatic glands are slightly enlarged. The mediastinal and mesenteric glands appear normal. The iliac glands are, however, markedly enlarged with a very soft haemorrhagic appearance on cut section.

The meninges and the brain show no abnormality apart from a tiny dark area in the left thalamus.

The right femur shows on section a circular area of soft haemorrhagic tissue at its head and also infiltration of pale yellow tissue about the mid-shaft. The vault of the skull shows areas of marked patchy thinning so that in these areas the skull bone is almost translucent. The vertebrae appear normal.

### **Pemphigus Vegetans (Response to Aureomycin Therapy).** Dr. A. GIRDWOOD FERGUSON.

CASE 1.—Mrs. W. R—, aged 38.

*History.*—The patient developed pruritus of the genitals followed by lesions which were indistinguishable from condylomata lata. Similar lesions appeared in the axillae and in the umbilical region. Dark-ground examinations and W.R. were negative. A course of penicillin injections brought no improvement. She was admitted to hospital on 10.iv.51.

*Examination on admission.*—The axillae, umbilicus and genital regions are covered with plaques of papillomatous or condyloma-like vegetations. In the mouth there are several small, eroded, whitish plaques. Blood count normal.

*Histology.*—(Dr. J. C. Dick.) Section shows intra-epidermal bullae containing large numbers of polymorphs. In the dermis, immediately under the epidermis, there is an infiltration of polymorphs and mononuclears.

*Progress and treatment.*—Locally—Pot. permanganate baths. Aqueous solution of  $\frac{1}{2}\%$  brilliant green with  $\frac{1}{2}\%$  gentian violet.

17.iv.51: Aureomycin 500 mg. 6-hourly. Dibexin capsules 2, thrice daily.

8.v.51: Aureomycin reduced to 250 mg. thrice daily.

10.vi.51: Axillae clear. Lesions still active in genital and umbilical areas. 3% Aureomycin cream now applied to these areas.

23.vi.51: Axillae remain clear. Other areas improving. Discharged from the ward to attend as an out-patient and to stop oral aureomycin and continue 3% aureomycin locally.

30.viii.51: Remains well; some residual staining in axillae. A few small papulopustular lesions present on the vulva.

11.x.51: Remains well.

CASE 2.—Mr. J. T—, aged 34.

*History.* In 1940, while serving in the Army, he developed a pruritic erythema of the groins and axillae, which he attributed to sweating caused by route marches. During his Army service he attended various hospitals, where several courses of x-ray therapy were administered with some transient improvement.

*Examination on admission* (4.v.51).—Raised, erythematous, warty plaques, with several superficial fissures, are present in the axillae and groins.

Blood count, serum protein, W.R., all normal.

*Histology.*—(Dr. J. C. Dick.) Section shows marked epidermal proliferation with formation of bullae and intense subacute and chronic inflammatory reaction in the subepithelial layer.

*Treatment and progress.*—4.v.51:  $\frac{1}{2}\%$  gentian violet with  $\frac{1}{2}\%$  brilliant green in water applied to lesions.

14.v.51: Aureomycin orally 500 mg. 6-hourly.

21.v.51: Improving; discharged from the ward to continue as an out-patient with aureomycin orally and 2% argyrol in zinc cream locally. The patient reported at weekly intervals for observation. The condition improved and aureomycin was discontinued on 26.vi.51.

4.ix.51: Remains well except for some activity in left axilla and right groin.

11.x.51: Remains well.

**Pemphigus Foliaceus (Response to Aureomycin Therapy)** Dr. A. GIRDWOOD FERGUSON.

Mrs. W. L—, aged 57.

*History.*—Diphtheria in childhood. Arthritis in 1947, for which she received gold injections, which were followed by a generalized dermatitis. This cleared up completely. Herpes zoster ophthalmicus in 1949. In March 1951 an eruption appeared in the groins and soon spread to involve face and trunk.

*Examination.*—A generalized exfoliative eruption is present. Scales are fine, paper-like and attached in the centres. Nikolsky's sign is present.

*Investigations.*—Hb 11.85 g. %; R.B.C. 3,910,000. W.B.C. 6000; neutros. 51%, eos. 14, large lymphos. 10, small lymphos. 22, monos. 3%. P.C.V. 41.5 ml. %, mean corpuscular volume 106 cubic microns. Mean corpuscular haemoglobin concentration 29%. E.S.R. (Wintrobe) 40 mm. in first hour.

Blood urea 41 mg. %. Serum total protein 6.5 g. %, alb. 4.15 g. %, glob. 2.35 g. %. A/G ratio 1.76. W.R. negative. Thymol turbidity 2 units. Sugar tolerance test normal.

*Urine.*—Specific gravity 1020. Reaction acid, albumin, a trace, sugar, a trace. Microscopical examination: a few hyaline casts, red blood cells and pus cells present. Highest specific gravity 1020.

*Histology.*—(Dr. J. A. Milne.) The horny layer is almost completely denuded. In one area, high up in the rete, are the remains of a vesicle, roofed by a parakeratotic scale. The corium, especially the papillary layer, is very oedematous, and is sparsely infiltrated by chronic inflammatory cells, among which are occasional eosinophils. The histopathological appearances are compatible with a diagnosis of pemphigus foliaceus.

*Treatment and progress.*—12.vi.51–20.viii.51: Aureomycin 500 mg. thrice daily. Dibixin 2 caps. thrice daily.

26.ix.51 to date: Aureomycin 250 mg. and dibixin 2 caps. thrice daily.

11.x.51: Condition has improved markedly.

Edinburgh, December 1951.

**Acne Conglobata in a Woman.**—Dr. G. A. GRANT PETERKIN.

Mrs. M. C—, aged 38.

*History.*—In her early twenties the patient had acne vulgaris of the chin and upper trunk, but was otherwise healthy with regular menstruation. Her mother for many years had suffered from deep abscesses in the axillae and after a back injury had developed "sinuses and septic infection." A sister has a tendency to axillary abscesses.

In 1935 the patient developed large "boils" in both armpits, which were treated with deep x-ray therapy with considerable benefit. In 1938 abscesses appeared in the natal cleft, in the groins and on the thighs. Owing to diffidence she sought no treatment until 1951, when her doctor gave her a course of penicillin without benefit. Five and half months ago she became pregnant, and for the past month has been receiving streptomycin injections (1 g. daily). For one or both of these reasons there has been considerable improvement during the past fortnight.

*On examination.*—Abscesses, deep sinuses and bridged and keloidal scars of considerable extent are present in the natal cleft, on the upper and inner aspects of the thighs and on the labia majora. In both axillae are multiple scars, many of them bridged. On the chin and upper trunk are scars of old healed acne vulgaris.

*Histology.* A sinus lined by squamous epithelium and including hair follicles in its wall is present a short distance below the epidermis. It resembles the proximal part of a pilonidal sinus. The dermis and subcutaneous tissue surrounding the sinus displays focal perivascular small round-cell infiltration of chronic inflammatory type.

*Comment.*—This appears to be a genuine case of acne conglobata occurring in a woman with a tendency inherited through the female side. It is worth noting that the pathologist classified the section as a pilonidal sinus. The improvement of the disease during the preceding weeks may have been due either to her pregnancy (cf. oestrin therapy in male cases) or to the streptomycin injections.

**Pyodermia Chronica Serpiginosa Superficialis Ulcerativa.**—Dr. G. A. GRANT PETERKIN.

W. N.—, aged 43, a miner.

*History.*—A satisfactory history cannot be obtained as the patient is stone deaf following otitis media in childhood. A cystic acne in youth left scarring of the face and neck. About 10 years ago itching red circular patches appeared on the trunk and have gradually increased in size and number. No drugs have been given.

*On examination.*—Scattered over the trunk are numerous circinate and gyrate lesions consisting of supple white scars and spreading margins slightly undermined and crusted.

*Investigations.*—Blood W.R. and Kahn negative on three occasions; c.s.f. normal. Blood count normal. Bacteriological examination of pus from undermined edge:  $\beta$ -haemolytic streptococcus (penicillin-sensitive).

*Histology.*—The epidermis is acanthotic; in the centre of the section there is a small crusted ulcer. The upper half of the dermis is oedematous, and scattered throughout its depth is a chronic inflammatory infiltrate composed very largely of plasma cells arranged in tightly packed masses, some perivascular in distribution, some apparently unrelated to vessels. The majority of the larger vessels show hyperplasia of their walls. Around the ulcerated area there is a superadded acute inflammatory reaction.

The section supports the clinical diagnosis of tertiary syphilis.

*Comment.*—After the patient had been thoroughly examined by Dr. R. C. L. Batchelor to exclude syphilis, a diagnosis of pyoderma gangrenosum was made. Treatment included intramuscular penicillin (19.6 mega units), sulphadiazine (28 g.) and potassium iodide, none of which produced any benefit. Since the use of aureomycin, 42 g. orally and 3% locally, there has been considerable improvement.

The following cases also were shown:

**Pustular dermatitis.**—Dr. ROBERT AITKEN.

**Epidermolysis bullosa, Ehlers-Danlos syndrome, Keloid, Squamous cell carcinoma and pseudoepitheliomatous hyperplasia, Solar sensitivity to oils, ? Leishmaniasis.**—Dr. G. A. GRANT PETERKIN.

**Sarcoidosis, Lichen simplex chronicus.**—Dr. P. W. HANNAY.

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## NORTH OF ENGLAND DERMATOLOGICAL SOCIETY.

9 October 1951.

**Acanthosis Nigricans.**—Dr. D. G. FRESHWATER.

A female domestic, aged 37. She was first seen in August 1951, when she complained of pigmentation and itching of the pubes and axillae. The persistent itching had preceded the pigmentation by three months, but was not of a degree sufficient to disturb sleep.

The pigmentation—its limits easily definable—varied in tone from a dirty brown to almost black; over its surface, and at first chiefly in the axillae, were scattered multiple flattish warty excrescences.

A physician did not think a full gastric investigation justified because of the absence, at that time, of any clinical evidence of gastric carcinoma, while a gynaecologist, whose opinion was also sought for irregular bleeding, diagnosed an inflammatory cause for the fixation of the small hard uterus.

The skin condition steadily evolved and now presents as follows:

The pigmentation is present symmetrically on dorsa of feet, over the Achilles tendons, extensor surfaces of knees, on the inner aspects of the thighs, on the perineum, the pubes, in the umbilicus, under the breasts, over the sternum; up the whole length of the vertebral column, around the lower border of the thoracic cage, around the neck at the collar line, where it is almost black. It extends from the axillae on to the inner surfaces of the upper arms, but is noticeably absent from the palms and soles, over the scapular area, from the top margin of the shoulders, and from inside the mouth.

The hyperkeratosis began to appear within a month of the first pigmentation. It was evident, at first, as roughness and dryness and fissuring of palms and soles only; but it gradually spread until it now appears generally in the same distribution as the pigmentation, but in addition on the palms and soles, on dorsa of fingers and hands and toes, around the mouth and eyes, on the back of the neck, to the occiput  $1\frac{1}{2}$  in. beyond the hair line, and on the areolae and nipples. Clinically the hyperkeratosis presents in most areas as roughness and dryness and fissuring of the skin, but in the axillae there is pronounced rugosity.

Flesh-coloured usually symptomless warty excrescences vary in size and number and distribution from time to time. They are present on the dorsa of the hands, on all surfaces of the forearms, in the axillae, and on the face but not in the mouth.

In January 1952 the patient was readmitted for surgical investigation of nausea and loss of appetite. Examination revealed epigastric tenderness and B.P. 90/65.

*Investigations.*—(September 1951.) Blood count, urine, chest skiagram, all normal. (January 1952.) Blood count: mild hypochromic anaemia. Adrenal function: total 17-ketosteroid excretion 0.540 to 0.58 mg., suggesting adrenal hypoactivity. Blood chloride 495 mg. %.

Test meal showed achlorhydria

Skiagram of stomach: ? filling defect.

Occult blood and melanin in urine negative.

In view of the low blood pressure and evidence of adrenal hypoactivity a DOCA implant was done with improvement in the blood pressure, and also the patient thought her skin was less rough. But because of the achlorhydria and the doubt in interpretation of the stomach skiagram a laparotomy was done. A large carcinomatous ulcer was found in the stomach with secondary involvement of the left adrenal and the pelvis.

Twenty-eight other cases also were shown.



Bradford Meeting—11 March 1952.

CASE REPORTS.

**Cicatricial Alopecia.**—Dr. W. E. ALDERSON.

D. S—, a boy, aged 2 years.

*History.*—The mother states that this child has had an area near the crown of his scalp on which hair has never grown. Parturition was normal, and no instruments were used. She thinks that there was some redness of this area when she first saw the baby. She had a small area of alopecia areata on her own scalp one year before the child was born.

*On examination.*—There is an irregular area of cicatricial alopecia on the vertex of the scalp about 4 cm. across. No other physical abnormality. Hairs taken from the border of the area show no abnormality; no evidence of tinea infection.

Dr. P. B. MUMFORD: I suggest that this is a cicatricial alopecia probably resulting from a burn from a hot-water bottle shortly after birth.

**Pemphigus Vulgaris; Intravenous ACTH Therapy.**—Dr. ALLAN BIGHAM.

W. B —, male, a textile overlooker, aged 58.

*History.*—First seen in May 1949 with eczematous patches on the left forearm, chest and back, of a few weeks' duration.

*Past history and family history.*—Previously a healthy life, and no dermatoses in the family.

*Progress.*—Extension of the lesions caused admission to hospital in June 1949. Shortly after admission bullae  $\frac{1}{2}$ –1 in. in diameter developed on apparently normal skin of the lower legs, without itching. New bullae developed, confined to these areas, in decreasing numbers, and the patient decided to go home in August 1949. He was next seen in March 1951, when he presented the classical picture of severe and widespread pemphigus vulgaris with bullae of all dimensions up to 3 in. across and no itching. Treatment with suramin, stovarsol, calciferol, streptomycin, chloromycetin and aureomycin made no impression on the course of the disease, and the progressive deterioration of the patient with increasing pain from the extending denuded areas necessitated continuous morphia administration. Then a limited supply of ACTH became available through the co-operation of Dr. J. K. Rennie, who suggested the intravenous route.

*Treatment.*—A daily dose of 20 mg. in one-fifth normal saline, 20 drops per minute, resulted in a resolution of lesions in 48 hours (7.ix.51). Further improvement was noted on 9.ix.51. A few new bullae developed on 11.ix.51, and as the patient objected to the intravenous route very strongly ACTH was given intramuscularly, 10 mg. six-hourly.

On 13.ix.51 there were no new bullae, and the intravenous route was restarted with 10 mg. daily. By 15.ix.51 on the same dose there was considerable improvement locally and generally. Intravenous therapy ceased on 18.ix.51, and 10 mg. were given intramuscularly six-hourly until 24.ix.51. From then until 29.ix.51, 10 mg. were given twice daily intramuscularly, when all therapy was stopped. On 6.x.51 all areas were dry and epithelialized, and he was discharged from hospital.

*Comment.*—No new lesions have developed up to the time of this meeting and he is able to get about. After a period of seven months in hospital with increasing deterioration under many accepted methods of therapy until he was *in extremis* the use of intravenous ACTH allowed him to leave hospital in approximately four weeks.

The following cases also were shown:

Dr. ALDERSON: Ehlers-Danlos Syndrome; Nodular Sarcoid; Epidermolysis Bullosa and Congenital Onychogryphosis; Scleroderma (Coup de Sabre).

Dr. BIGHAM: **Mycosis Fungoides** (2 cases); **Plummer-Vinson Syndrome**; **Psoriasis with Acrosclerosis, Dermatomyositis.**

Mr. SHAW: **A Series of Cases Treated by Plastic Surgery.**

Dr. A. J. BARLOW read a paper on "Penetration of the Skin."

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## OXFORD REGION DERMATOLOGICAL GROUP.

Meeting at Northampton on 27 October 1951.

### **Senear-Usher Syndrome.**—Dr. R. B. COLES.

A man aged 45.

The patient has had this condition two and a half years.

*History.*—The eruption began with the appearance of itchy vesicles and small bullae on the body. When first seen in December, 1949, this was diagnosed as dermatitis herpetiformis, and he was given treatment with liquor arsenicalis and with sulphapyridine, without response. As the months passed the lesions began to change. Brown and black scale-crusts appeared on the sternal region and between the shoulder-blades. Vesicles and bullae became less numerous, but large raw areas appeared and flaccid bullae were seen on the chest and back. Nikolsky's sign was positive. During this time he had a series of febrile episodes with bullous reactions on the trunk and limbs. At no time were there lesions in the mouth. During the last six months thick scale-crusts have appeared on the butterfly wing area of the face, and the scalp has been involved similarly.

*Investigations.*—Histology (Dr. W. E. Bryan): Oedema of the epidermis with the formation of clefts of the superficial layers. No *corps ronds* or *grains* found, no eosinophilic infiltration and no changes in the corium.

White cell count was normal and has never shown more than 4% eosinophils.

*Present condition.*—The patient shows scale-crust formation on the butterfly-wing area of the face and also in the scalp. The crusts are easily removed, leaving a damp, salmon pink, oozing surface. On the trunk crust formation reaches a most remarkable degree and on the hands and feet small herpetiform vesicles and erosions are seen.

*Treatment.*—The patient had sulphapyridine, calciferol, antihistamines, organic and inorganic arsenic, suramin, penicillin and non-specific protein shock without any improvement. He seemed to become slightly worse after a full course of cortisone. About a year ago he was given a course of aureomycin, 250 mg. six-hourly. No improvement resulted, but recently a course of the same drug, 500 mg. six-hourly, has been followed by great improvement, not only in the clearing of the dermatosis, but in the patient's general condition.

*Postscript* (22.ii.52): This improvement was not maintained, and aureomycin has been abandoned.

### **Polyarteritis Nodosa.**—Dr. T. PARTINGTON and Dr. R. B. COLES.

A woman aged 29.

*History.*—This patient attended hospital in October, 1950, complaining of general weakness, loss of weight and pains in the legs. On examination then she was noted to have cyanotic blotches on the legs, and multiple epidermic and subcutaneous nodules on the limbs. There was slight angular stomatitis. Her temperature was found to be persistently raised in the evenings from 99–100° F.

*Investigations.*—Blood count normal apart from hypochromic anaemia; haemoglobin 68%.

Plasma proteins: Total, 5.4 gm./100 c.c.; albumen, 1.4 gm./100 c.c.; globulin, 4.0 gm./100 c.c.; A/G ratio, 0.35/1.

The urine was normal, no red cells being found. Blood culture was sterile on several occasions. Sternal puncture was normal.

Histology (Dr. H. J. Voss): Epidermis and corium appear normal. Deep to the corium can be seen a number of small and medium-sized arteries showing mainly chronic inflammatory and degenerative changes. The adventitia and media are infiltrated with small round cells, polymorphs being only uncommonly present. The media is in places destroyed, replaced by scar tissue or proliferating fibroblasts, and the lumen is often narrowed by fibroblastic proliferation in which small round cells are much in evidence in some arteries. The appearances are those of polyarteritis in the chronic or healing stage rather than in the acute inflammatory stage.

*Present condition.*—The nodules have all disappeared but reticular cyanotic discoloration still remains on the arms and legs.

The following cases also were shown:

Scleroderma (2 cases); Papulo-necrotic Tuberculide; Dermatitis Artefacta; Fronto-limbal Alopecia; Hydradenitis Suppurativa; Pemphigus Vulgaris; Parapsoriasis in Plaque; Lichen Sclerosus et Atrophicus; ? Lupus Erythematosus; Intradermal Neoplasm with Squamous Change; Balanitis Xerotica Obliterans.

## BOOK REVIEWS.

### TUMOURS OF THE SKIN.\*

THIS book is an important acquisition to the dermatologist's library, containing a good deal of material with which he is not necessarily familiar.

The chapter of cutaneous surgery and plastic repair is thirty pages long and fully illustrated, giving details of the instruments required and operative procedures, including grafting methods. Similarly, the last chapter of thirty pages is devoted to radiation physics. The remainder of the work is divided into discussion of benign and malignant tumours. The benign section includes a chapter on pre-cancerous conditions. Many of these, such as lupus erythematosus, tuberculosis and syphilis of the skin, are not necessarily tumours. Bowen's disease and allied disorders are classed under the carcinomata.

The section of benign tumours is excellent, being well illustrated and clearly arranged, and it provides an excellent source of reference. Tumours are classified under their probable source of origin. There is a section on tumours, such as warts, that are of infective origin.

Interest will chiefly centre on the section of malignant tumours, which comprises a chapter each on carcinoma of the skin, malignant melanoma, sarcoma and lymphoma. There is a full discussion on carcinomata of the buccal mucous membrane and the

\* *Tumours of the Skin.* By JOSEPH JORDAN ELLER, B.S., M.D., and WILLIAM DOUGLAS ELLER, M.D. London: Henry Kimpton. 2nd ed. Pp. 697. 550 illustrations and 3 coloured plates. Price 105s.

tongue. Treatment is very fully discussed, and a special feature is twenty-one diagrammatic examples of carcinomata situated on different sites, with suggested methods of therapy in order of preference. As a matter of interest, radium and x-ray are suggested as the optimum method in approximately eight cases each, surgery in three and electro-surgery in one, but combined methods are frequently advised and are well described.

In regard to the details of x-ray technique, divided doses are recommended. The authors state that their preference is for fractional doses of 1000 r for a total of 3000 to 6000, depending on the degree of malignancy and the response of the lesions. In the main the dosage recommended tends to be somewhat greater than that commonly used in this country. Mention is made of 4000 r as an initial dose, to be followed by 2000 in a week and a further 2000 after another week. Contact therapy with low voltage is fully discussed.

The book is very well printed, and the general presentation, including a full bibliography, is excellent.

H. W. G.

#### BONE LESIONS OF YAWS.\*

THIS is the first comprehensive account of the osseous changes in yaws by a worker who is an acknowledged authority. The reviewer, who has happy memories of his meetings with Dr. Hackett in the Lango District of Uganda, can vouch for the trying conditions under which the work was done and the author's perseverance and meticulous attention to detail. Tropical temperatures, inadequate water supplies and camp conditions were all successfully overcome.

The author adroitly evades his first difficulty by declaring himself a dualist for the purpose of this monograph, i.e., he here regards syphilis and yaws as distinct diseases. He is justified, for the disease which is so prevalent in Lango is contracted in childhood and is non-venereal. Venereally acquired syphilis is extremely rare. He therefore records the bone lesions of the non-venereal disease in a factual manner, and rightly leaves others to speculate on the relationship of the two diseases. Monists will naturally be heartened by the fact that (apart from osteo-chondritis, which was not found in this series) no bone lesion was seen in yaws which may not be found in cases of syphilis. A short comparison of osseous changes in syphilis and yaws is included, and here the author has to depend, for the former disease, on the observations of others. He rightly states that there is need for a thorough investigation of the bone lesions in syphilis in Africans.

In view of the high incidence of yaws (20.9%) in Lango it was not difficult for the author to collect 372 cases for study. Other causes of bony abnormality, such as syphilis and malnutrition, are justifiably excluded on the grounds of probability, and the author proceeds to correlate the radiographic changes with the clinical stages of yaws as judged by the cutaneous lesions. The work itself must be consulted for the details, but it may be stated that the bone lesions are distinct and characteristic in the secondary and tertiary stages.

The reproductions are dia-positives and adequately demonstrate the most important features. The text is concise and for the most part unambiguous, and the bibliography includes all important relevant references. The publishers have produced a volume fully worthy of the excellent material presented. The work is indispensable for those who study the treponematoses; in its sphere it is unique and authoritative.

L. J. A. L.

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\* *Bone Lesions of Yaws in Uganda*. By C. J. HACKETT. Oxford: Blackwell Scientific Publications, 1952. Pp. 194. 113 illus. Price 45s.



## CURRENT LITERATURE.

**PARALLEL TESTING WITH CRUDE HEART EXTRACT WASSERMANN ANTIGENS.** I. N. ORPWOOD PRICE and A. E. WILKINSON. (1951) *Brit. J. vener. Dis.*, 27, 191.

In the course of the investigation 4860 sera were tested in parallel by utilizing two antigens, namely the standard Harrison-Wyler Wassermann antigen using the Whitechapel Wassermann technique, and with the same antigen used at its optimal titre. The use of the antigen at its optimal titre greatly increased its sensitivity, and it was estimated to give between 0.27 and 0.46 per cent. non-specific reactions.

W. G. A.

**BEJEL.** E. H. HUDSON. (1951) *Brit. J. vener. Dis.*, 27, 174.

This article is based upon a most comprehensive survey of the disease in the Near and Middle East. Bejel, though a spirochaetal infection, is principally acquired in childhood and is essentially non-venereal. Certain clinical features are mentioned, namely the frequency of angular stomatitis which often appeared to confuse the diagnosis and the difficulty in drawing a dividing line between bejel and yaws. Many interesting points are raised, and the paper should be read in full in order to appreciate them.

W. G. A.

**SOME OBSERVATIONS ON FOLLICULAR OBSTRUCTION IN ACNE.** J. P. O'BRIEN. (1951) *Austral. J. Derm.*, 1, 118.

This article gives a brief summary of the histological changes of acne, and compares the follicular obstruction with that encountered in miliaria rubra. He finds that there are numerous bodies apparently cocci in the region of the keratin ring at the point of follicular obstruction, and puts forward the hypothesis that the primary lesion in acne is an obstruction resulting from a low-grade infection.

This paper is only a preliminary report, and it will be interesting to see whether further evidence can be produced in support of this hypothesis.

R. B.

**ACNE VULGARIS: ITS AETIOLOGY AND TREATMENT.** JOHN C. BELISARIO. (1951) *Austral. J. Derm.*, 1, 85.

The author reviews the literature at some length, giving 86 references, and describes the treatments he has found most valuable.

His experience accords in general with that of most clinicians in this country, with the following exceptions:

1. Vitamin A, 100,000 units daily, and stilboestrol, 0.5 mg. *b.d.*, seem to be given to most patients as a routine.

2. He advises extraction of comedones only if they do not disappear after two or three months' treatment.

3. His x-ray dosage, given to approximately half his patients, was 100 r. weekly for eight doses, with the addition of four more doses in re-treated cases.

4. He uses a modification of Kurtin and Yontef's (1949) paste, containing 5% each of precipitate of sulphur, sulphadiazine and crude coal tar in equal parts of lanoline and Lassar's paste. This ointment is applied at night and washed off each morning, after which the skin is exposed to ultra-violet light.

Many will envy his figure of 90% good results by all methods of treatment. Most will share his surprise that he observed no sensitization eruptions in 45 cases treated with the paste mentioned above.

R. B.

**THE ECZEMA-DERMATITIS NOMENCLATURE PROBLEM.** B. L. W. LINN. (1951) *Austral. J. Derm.*, 1, 127.

This paper includes a long discussion and relevant quotations from a number of authorities.

The author proposes to classify diseases characterized histopathologically by exudation in the acute stage and proliferative acanthosis in the chronic stage as follows:

1. Traumatic dermatitis, including all cases caused by chemical or physical irritants "which would inflame any skin."

2. Infective dermatitis including those of seborrhoeic, coccal, fungoid, or monilial origin.
3. Eczematous dermatitis with eight sub-groups: (a) contact, (b) endogenous, (c) infantile, (d) flexural or constitutional, (e) diffuse neurodermatitis, (f) localized neurodermatitis, (g) varicose, (h) autosensitization.

R. B.

**A CASE OF REGIONAL LYMPHATIC SPOROTRICHOSIS.** CLIVE F. ROBINSON and THOMAS D. ORBAN. (1951) *Austral. J. Derm.*, 1, 142.

The patient, a man aged 70, contracted the disease after puncturing the palm of his right hand whilst using manure in his garden. The incubation period appears to have been two days; the diagnosis was made by culture on Sabouraud's agar. Intraperitoneal inoculation of a rat with a suspension obtained from a culture caused a widely disseminated infection. The histological lesions resembled tubercles but contained small amounts of fungus.

The patient was treated with potassium iodide internally and iodine in paraffin externally; he completely recovered.

R. B.

**TRANSMISSION TO MAN OF INFECTIOUS LABIAL DERMATITIS OF SHEEP.** B. B. BARRACK. (1951) *Austral. J. Derm.*, 1, 135.

Eighteen laboratory workers were inoculated with a bacterium-free filtrate of the lesions of labial infectious dermatitis of sheep; 7 produced strong positive reactions and 5 moderate reactions. The lesion was an erythematous papule, which increased in size and in some cases showed seropurulent exudation. There was no pain or general reaction, but some patients developed lymphadenitis. Sheep re-inoculated from the positive cases developed labial dermatitis.

The author considers that this condition is the same as that known as Orf in this country, and records 2 patients in whom he made the clinical diagnosis in spite of negative laboratory findings.

R. B.

**TINEA TONSURANS: A SUMMARY OF THE TREATMENT OF 120 CASES.** HENRY SHARP. (1951) *Austral. J. Derm.*, 1, 138.

The infecting organism was *M. canis* in all cases. They were treated with Whitfield's ointment only, the hair being shaved twice weekly, and kept covered with a linen cap. About three-quarters of the cases were cured within 16 weeks, but unfortunately an unstated number of children who did not follow the treatment in detail were not included in the study, neither were a "great number" who failed to return after the first negative Wood's light examination.

R. B.

**FAILURE OF HYALURONIDASE TO INTENSIFY OR SPREAD CONTACT ECZEMA.** G. ASBOE-HANSEN. (1951) *Acta dermat.-venereol., Stockh.*, 31, 710.

Hyaluronidase failed to spread or augment the allergic contact eczema to various chemicals in 32 known subjects when injected 1 hour before the patch test was applied.

G. A. H.

**COLLOID AND SENILE DEGENERATION OF THE SKIN.** J. R. PRAKKEN. (1951) *Acta dermat.-venereol., Stockh.*, 31, 713.

A typical case of colloid (pseudo) milium is described. Histologically absence of the normal argyrophilia at the epidermo-dermal junction and an exceptionally large number of mast cells are described in addition to the usual features. It is suggested that except in the juvenile form colloid degeneration may be related to senile degeneration, as there were several stages in the degeneration of collagen, including that known as senile degeneration and ending in formation of colloid substance.

Excessive and prolonged exposure to sunlight may be the cause in both conditions.

G. A. H.

**THE EFFICACY OF ANTIMYCOTIC TREATMENT OF EPIDERMOPHYTOSIS.** P. V. MARCUSSEN. (1951) *Acta dermat.-venereol., Stockh.*, 31, 666.

The efficacy of treatment was judged by the relapse rate; patients under observation  $1\frac{1}{2}$ -4 $\frac{1}{2}$  years. Cure results were 43.4% of cases (patients treating themselves), 75.4%-84.9% (daily ambulant hospital treatment). The increase in incidence of epidermophytosis may be explained by the high relapse rate.

G. A. H.



**PASSIVE TRANSMISSION OF DINITROCHLORBENZENE ALLERGY WITH WHITE BLOOD CELLS FROM SENSITIZED GUINEA-PIGS.** H. HAXTHAUSEN. (1951) *Acta dermat.-venereol., Stockh.*, 31, 659.

Allergy to dinitrochlorbenzene may be transmitted from sensitized guinea-pigs to a normal animal by intraperitoneal injection of white blood cells. Most of the donor animals were sensitized 2 weeks or more prior to bleeding, but white cells from donor animals sensitized one week have given a negative result.

It is not possible to transmit the sensitivity via plasma nor via cells of exudate containing 80%-90% granulocytes.

It is suggested that lymphocytes may transmit the sensitivity, and that this is transmitted directly to the skin without any antibody dissolved in the plasma as an intermediate link.

G. A. H.

**TWO CASES OF EPIDERMOLYSIS BULLOSA HEREDITARIA LETALIS.** G. SCHAFFER. (1951) *Acta dermat.-venereol., Stockh.*, 31, 704.

An account of the symptoms of epidermolysis bullosa hereditaria letalis. This form of disease differs from the simple or dystrophic forms mainly in an onset at or shortly after birth with blisters on skin and mucous membrane, deformation and dystrophy of the nails and a fatal termination usually before the third month.

G. A. H.

**OBSERVATIONS ON MELANIZATION IN ISOLATED HAIR CELLS.** E. MEIROWSKY, L. W. FREEMAN and B. A. WISEMAN. (1951) *Acta dermat.-venereol., Stockh.*, 31, 723.

The origin of melanin pigment was studied in the Himalayan rabbit. Melanoblasts may be specialized epithelial cells, and it is suggested that epithelial cells can and do form melanin in the absence of melanoblasts, melanin being a product of metabolic activity of the nucleus of the epithelial cell.

G. A. H.

**SEASONAL VARIATION IN THE INCIDENCE OF CRAB LICE AMONG LOOSE WOMEN IN COPENHAGEN.** B. SYLVEST. (1951) *Acta dermat.-venereol., Stockh.*, 31, 676.

22% of loose women in Copenhagen had crab lice (*Phthirus pubis*), the greatest incidence being in the winter (30%) and smallest in the late summer (15%).

G. A. H.

**CANCER OF SKIN AND OCCUPATIONAL TRAUMA.** J. G. DOWNING. (1952). *J. Amer. med. Ass.*, 148, 245.

This interesting review deserves to be read in the original. The author points out that as occupational cancer is not notifiable in the United States, its incidence cannot be accurately estimated. He reports personal cases in tar workers, a gardener (arsenical sprays), and in a grease pit worker in a service station. He also refers to the occurrence of serotal cancer in men engaged in the manufacture of paraffin wax.

The second half of the paper is devoted to physical trauma as a cause of skin cancer. The author has never seen a case in which he was satisfied that a single physical trauma was responsible for a cancer. He quotes cases allegedly due to repeated injury, and gives criteria for the diagnosis of occupational cancer due to trauma. He described the work of the United States Atomic Energy Commission as an example of what can be accomplished if occupational hazards are fully admitted and adequate precautions are taken.

A. J. R.

**THROMBOPENIC PURPURA FOLLOWING USE OF DIGITOXIN.** H. BERGER. (1952) *J. Amer. med. Ass.*, 148, 282.

Thrombopenic purpura in a woman aged 70 with congestive heart failure was proved to be due to digitoxin.

A. J. R.

**FAVOURABLE RESPONSE OF SARCOIDOSIS TO CORTISONE TREATMENT.** M. J. SMALL. (1951) *J. Amer. med. Ass.*, 147, 932.

Four cases of sarcoidosis treated with cortisone from 4 to 6 weeks showed rapid regression of the lesions and dramatic symptomatic improvement. One patient subsequently developed one lesion and probably also genito-urinary tuberculosis. This latter observation seems to be an isolated one, and the author doubts whether there is a causal relationship between the administration of cortisone and the development of tuberculosis.

A. J. R.

**CORTISONE THERAPY OF BOECK'S SARCOID.** F. J. LOVELOCK and D. J. STONE. (1951) *J. Amer. med. Ass.*, **147**, 930.

Two cases of sarcoidosis treated with cortisone showed clinical improvement and prompt regression of the pulmonary lesions radiologically. In one patient the Kveim test, which had been positive, was negative during cortisone therapy. A. J. R.

**RECURRENT THROMBOPHLEBITIS IN OBSCURE MALIGNANT TUMOUR OF THE LUNG.** M. M. FISHER, L. A. HOCHBERG and N. D. WILENSKY. (1951) *J. Amer. med. Ass.*, **147**, 1213.

Trousseau in 1887 first observed that recurrent phlebitis may be the first sign of a visceral carcinoma. After reviewing the literature on this subject the authors report 4 cases of carcinoma of the lung which presented in this way. All had been regarded as suffering from thromboangiitis obliterans. The presence of cancer should be suspected in cases of otherwise unexplained thrombophlebitis, particularly if further attacks occur after adequate treatment with anticoagulants. A. J. R.

**CORTISONE AND CORTICOTROPIN (ACTH) IN DERMATOLOGY.** R. R. KIERLAND, P. A. O'LEARY, L. A. BRUNSTING and J. W. DIDCOCK. (1952) *J. Amer. med. Ass.*, **148**, 23.

This valuable summary of recent Mayo Clinic experiences should be read. Cortisone and ACTH give symptomatic relief but do not cure. Worthwhile results have been obtained in acute lupus erythematosus, early scleroderma, pemphigus vulgaris and foliaceus, psoriatic arthritis, exfoliative dermatitis, drug and serum reactions and the intense pruritus in some eczematous states. These hormones have no value in uncomplicated psoriasis, ordinary forms of eczema and lymphoblastomas. Syphilitic interstitial keratitis responds well to the local application of 1 to 2% cortisone. The main contra-indications to cortisone and ACTH therapy are hypertension, diabetes mellitus, newly acquired or latent infections, especially tuberculosis, psychosis or marked emotional instability, and conditions in which there is fluid retention such as congestive heart failure and nephritis. A. J. R.

**SKIN SCRAPINGS IN LEPROSY.** R. K. MADDOCK. (1952) *J. Amer. med. Ass.*, **148**, 44.

Skin scrapings from 19 of 84 supposedly arrested cases of leprosy were positive. If reliable results are to be obtained the skill of the operator and the technique employed are important. The author describes and recommends the Wayson technique, in which a scraping is made from the full thickness of the skin. A. J. R.

**GASTROINTESTINAL HAEMORRHAGE DUE TO NEUROFIBROMATOSIS.** W. P. KLEITSCH, J. H. KEHNE and C. F. GUTCH. (1951) *J. Amer. med. Ass.*, **147**, 1434.

Two cases are reported of severe gastrointestinal haemorrhage occurring in neurofibromatosis, and proved to be due to neurofibromata ulcerating the overlying intestinal mucosa. This diagnosis should be considered when unexplained microcytic anaemia is encountered in neurofibromatosis. Treatment is by surgical resection of the involved segment of intestine. A. J. R.

**OCCUPATIONAL DERMATOSES IN PHYSICIANS.** E. EPSTEIN. (1951) *J. Amer. med. Ass.*, **147**, 1751.

This is a review based on 60 answers to a questionnaire sent to dermatologists. Professional dermatoses are less common in the medical profession than might be expected considering the risks involved. Most important was dermatitis caused by scrubbing up, antiseptics, antibiotics and local anaesthetics. Rubber-glove dermatitis was sometimes shown to be due to orris or merthiolate sensitivity. Occupational dermatitis is commoner in nurses and dentists than in doctors. Neurodermatitis is sometimes encountered, and nervous factors can determine recurrences of exogenous dermatitis. Pyogenic infections are sometimes acquired from patients, as are scabies and syphilis (27 extragenital chancres reported). An average of 3 cases of radio-dermatitis in doctors are still seen each week at the Mayo Clinic. Contact dermatitis from self-medication is commoner in doctors than dermatitis from occupational exposure. A. J. R.

**HAEMORRHAGIC BULLOUS URTICARIA TREATED WITH CORTICOTROPIN.** G. M. LICHTENSTEIN and T. B. FRIEDMAN. (1951) *J. Amer. med. Ass.*, **147**, 1658.

A severe haemorrhagic bullous urticarial reaction to penicillin which had failed to respond to antihistamines, ephedrine or adrenalin responded to 20 mg. of ACTH 6-hourly. A. J. R.